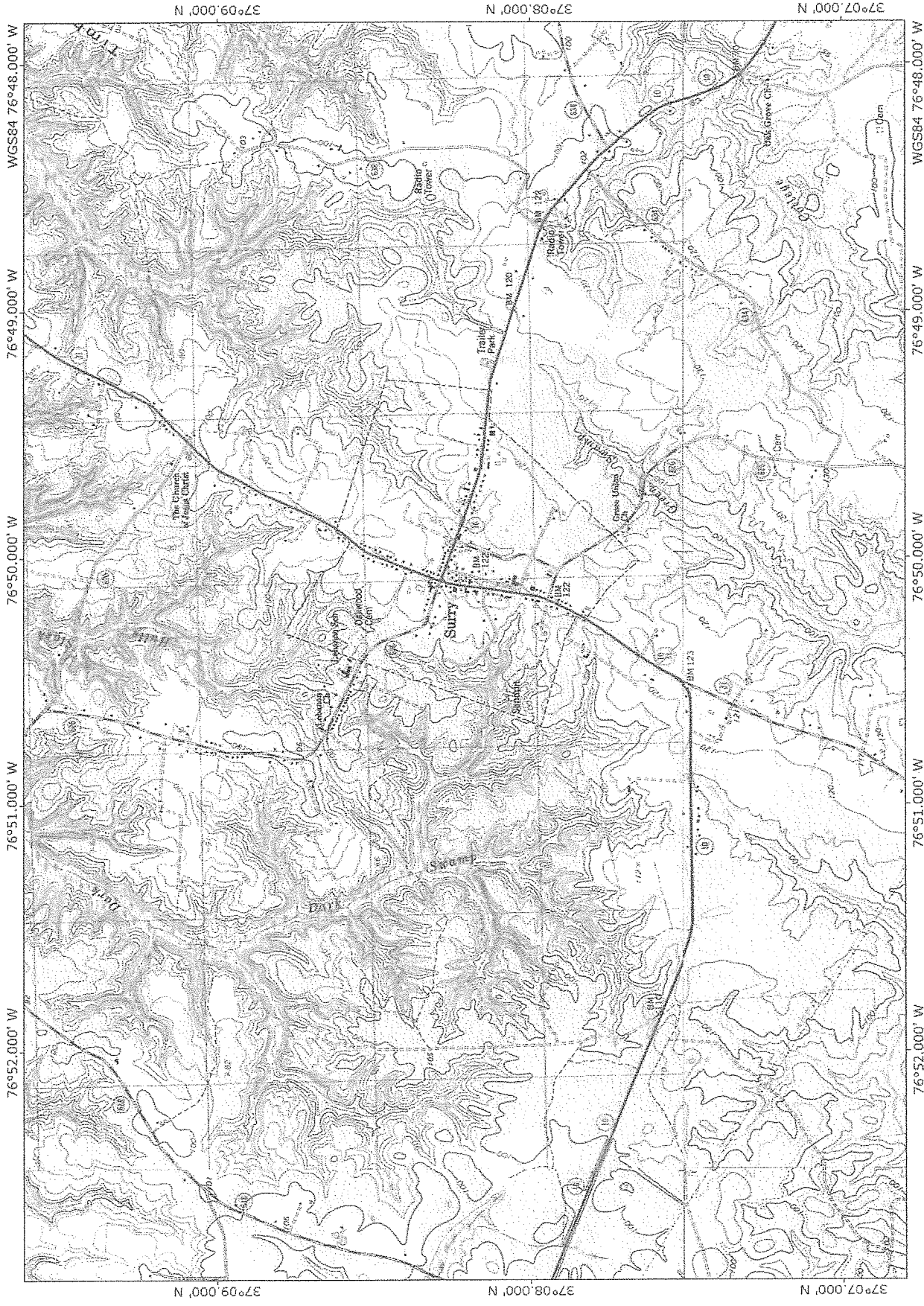


**Attachment A**  
**Facility Location**

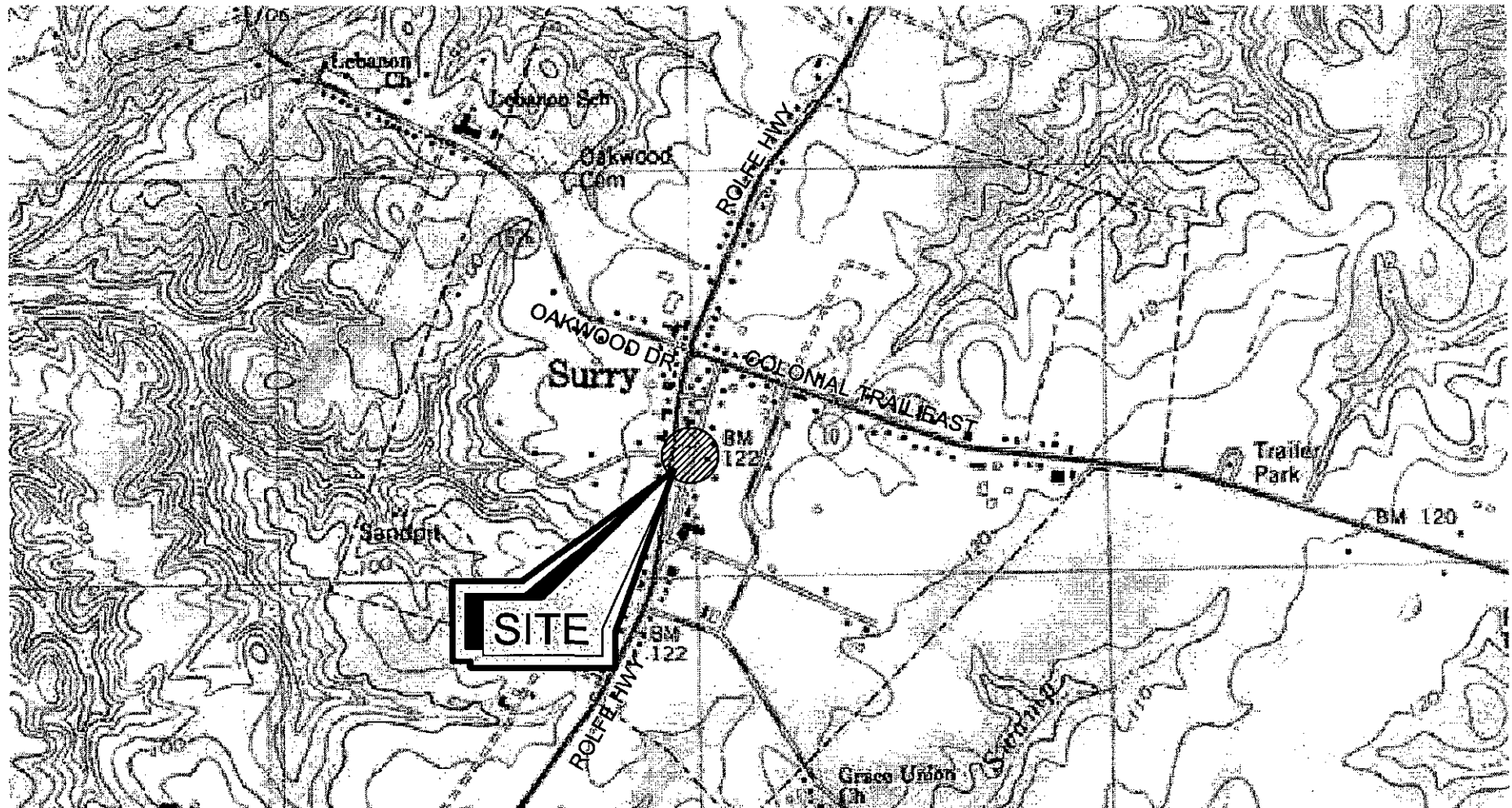
TOPO! map printed on 02/06/14 from "Untitled.tpo"



Map created with TOPO!® ©2003 National Geographic (www.nationalgeographic.com/topo)

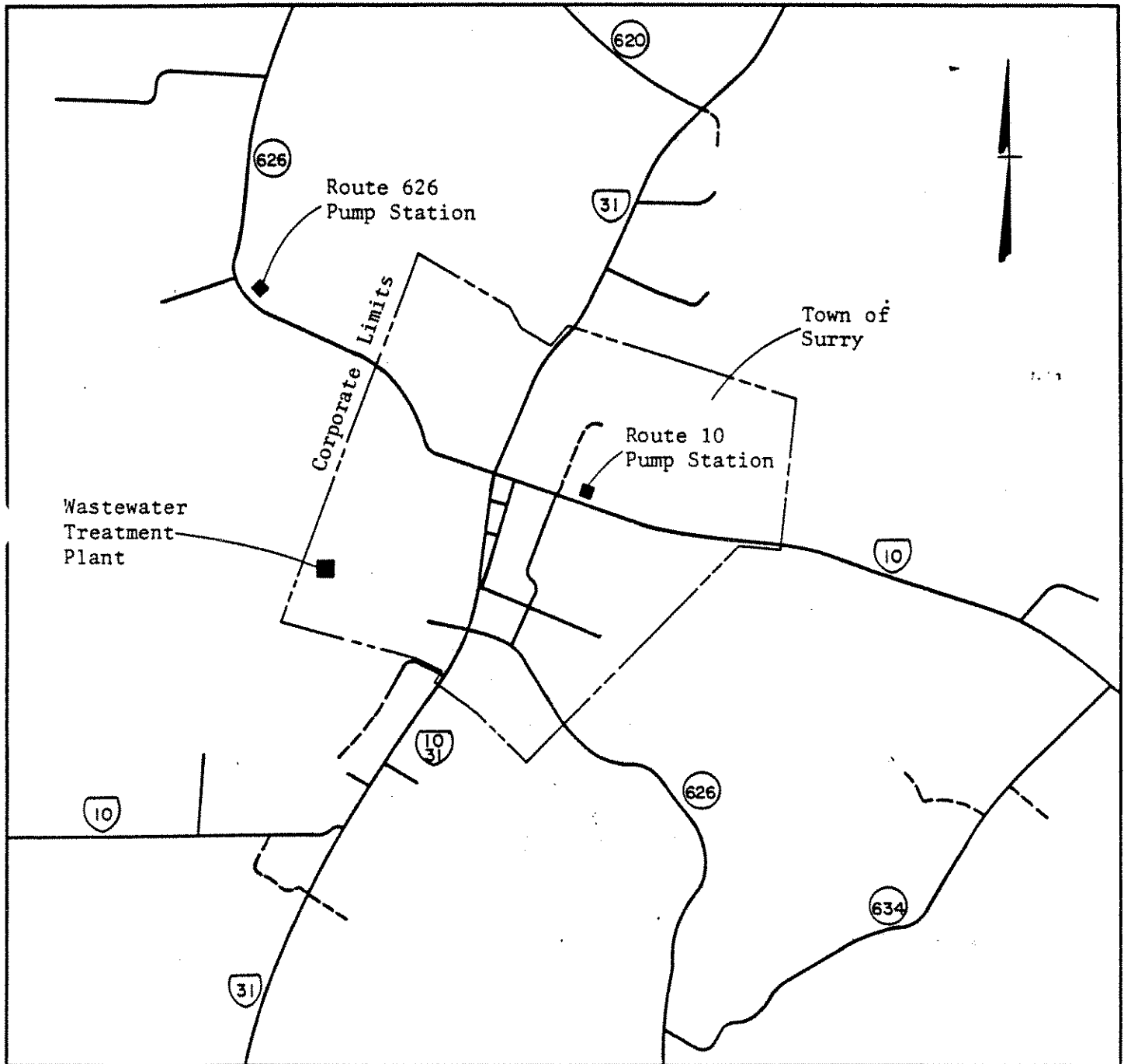


# Town of Surry STP



## Vicinity Map

SCALE: 1" = 2000'



*Note: There are no wells or springs within  $\frac{1}{4}$  mile of the Plant.*

FIGURE 1-1  
LOCATION MAP





**Attachment B**  
**Flow Diagrams**

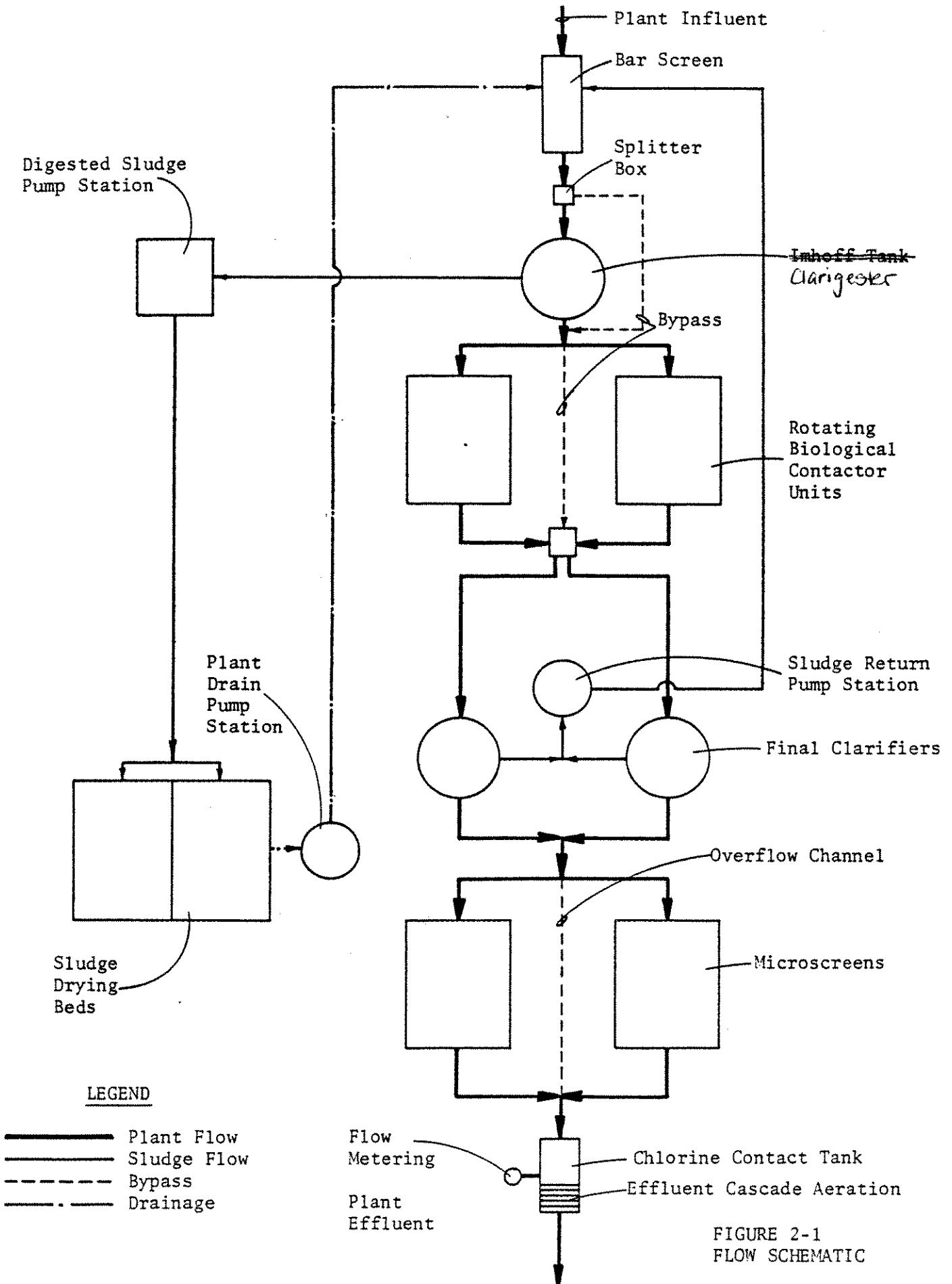
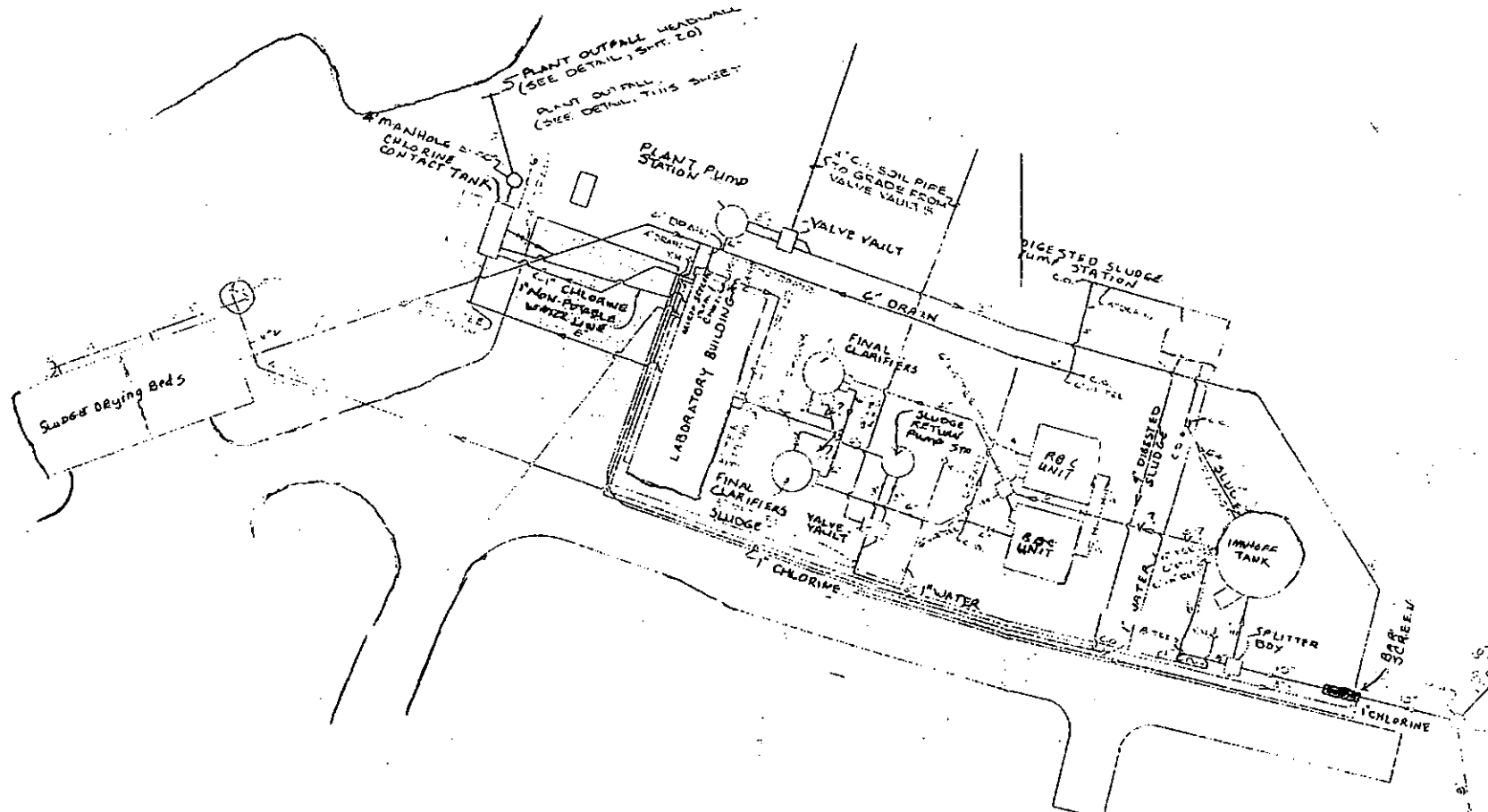


FIGURE 2-1  
FLOW SCHEMATIC

Town of Surry, Inc.  
Wastewater Treatment Plant  
11463 Rolfe Hwy  
Surry, Va. 23883





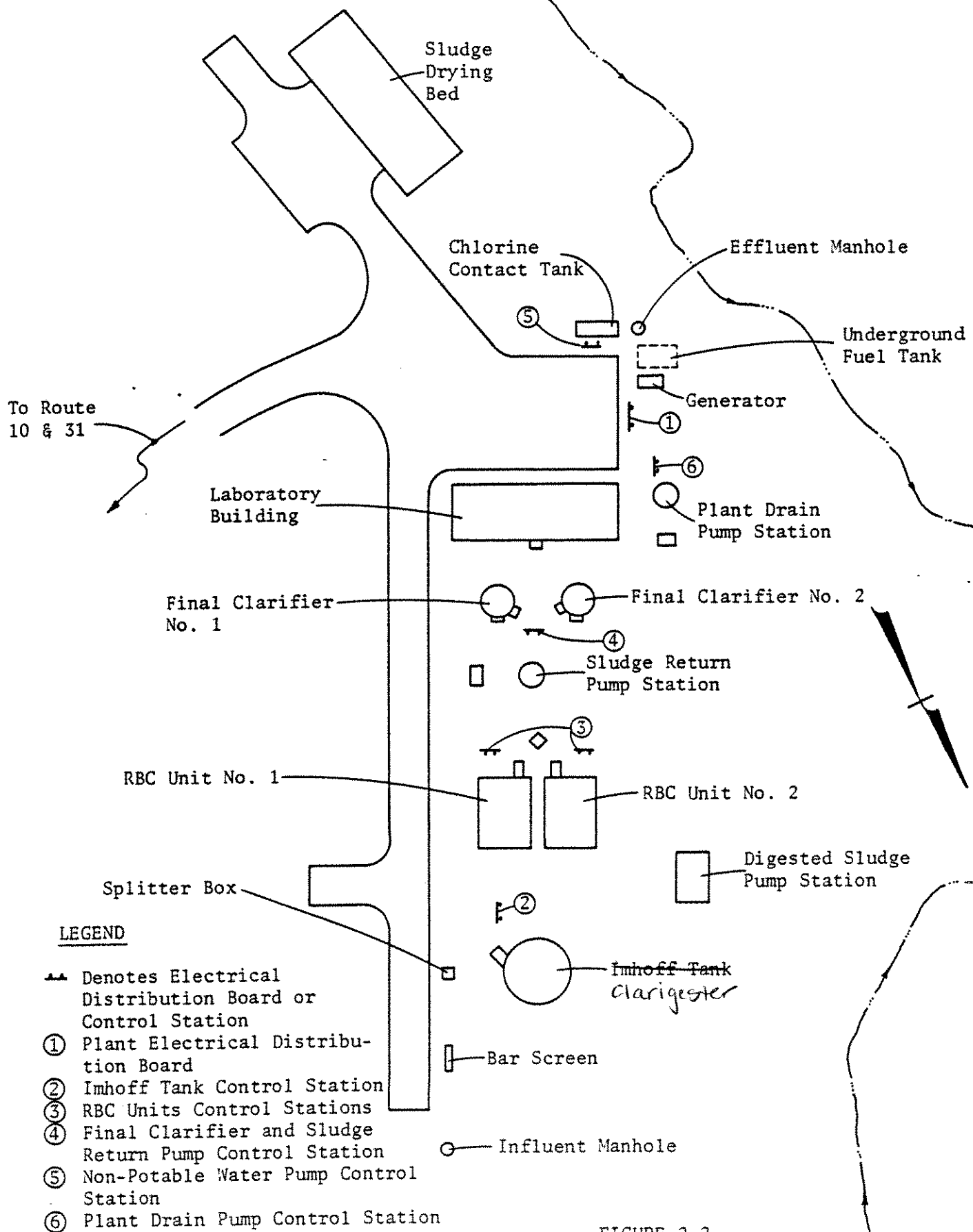
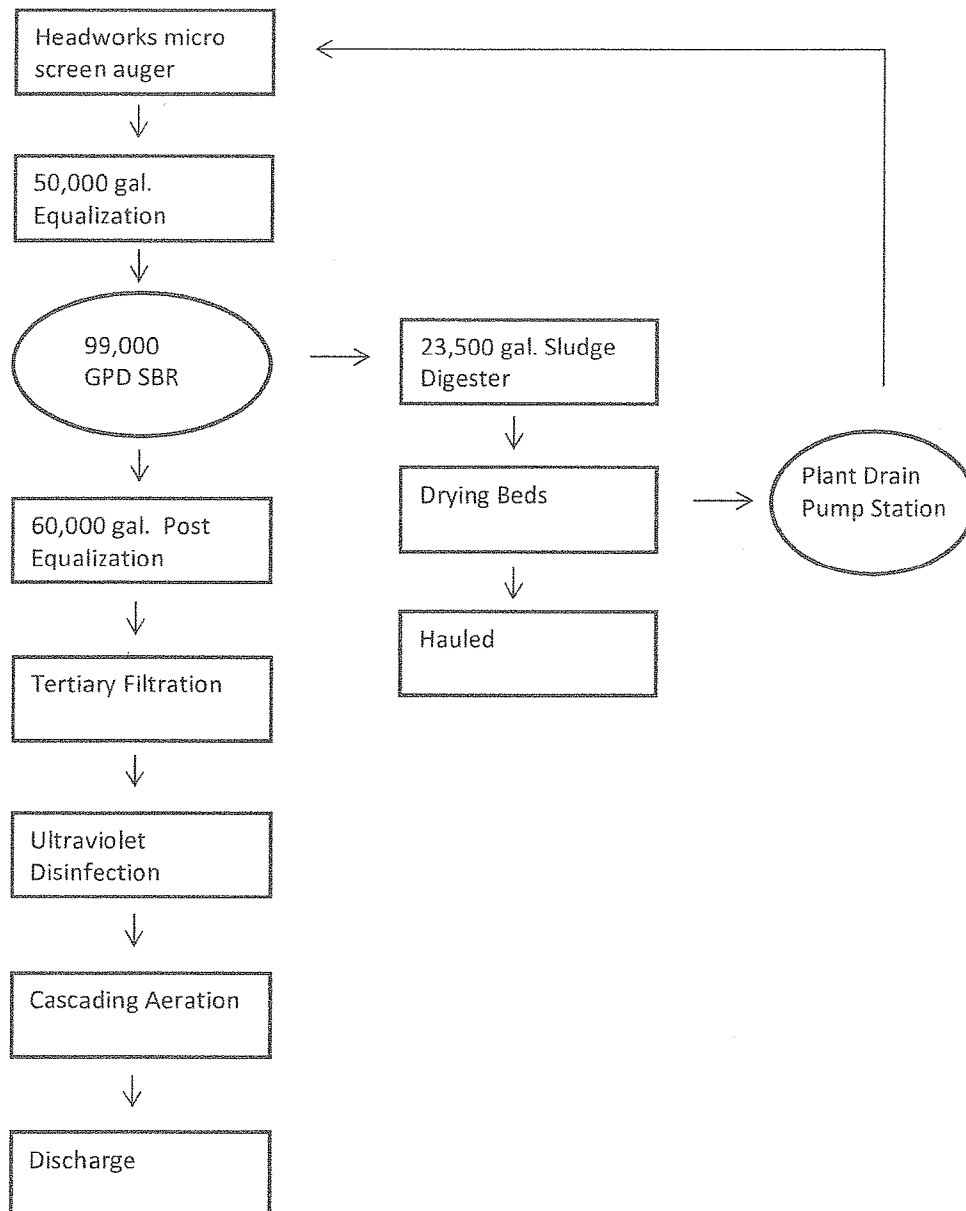
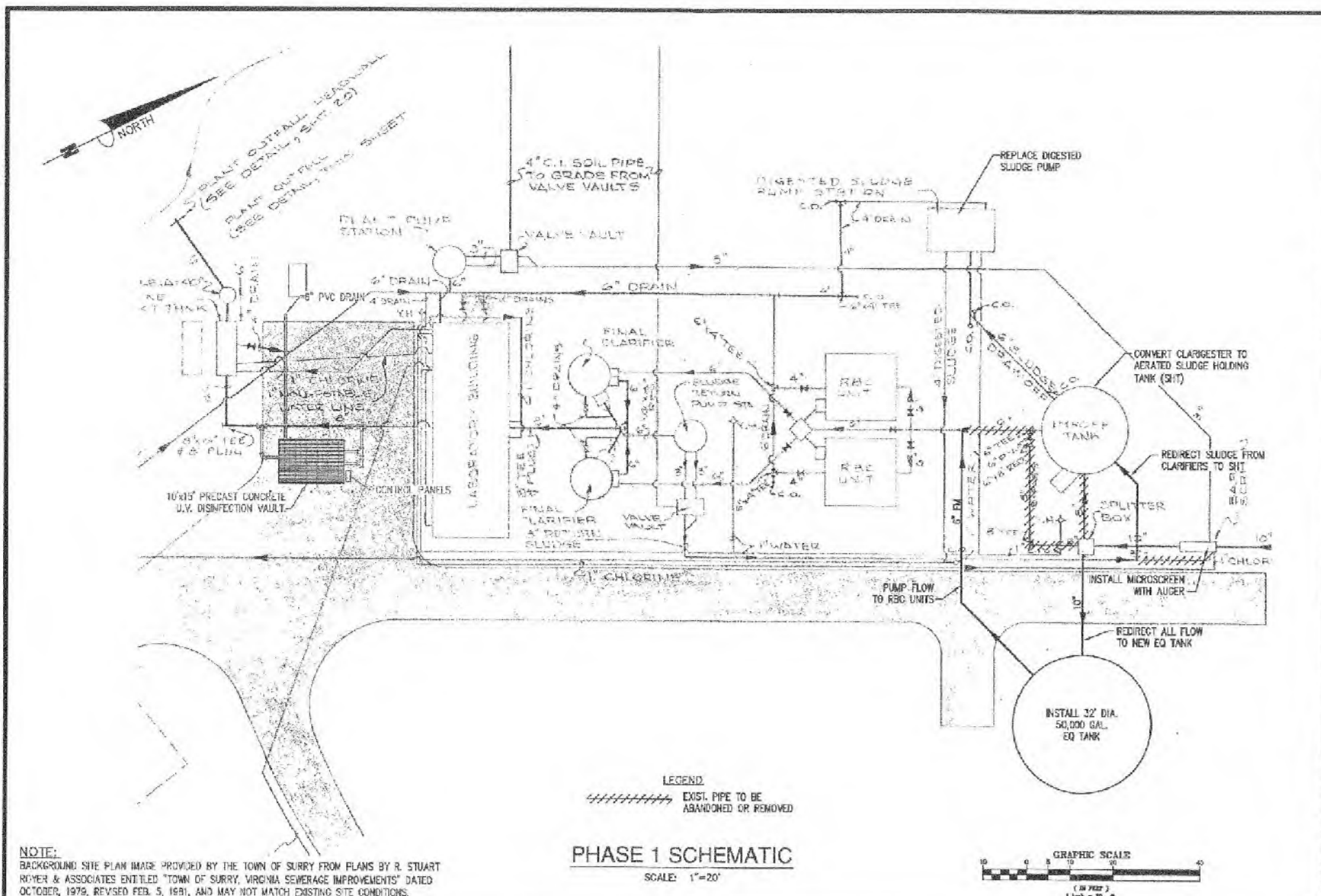


FIGURE 2-2  
PLANT LAYOUT

Proposed WWTP Line Diagram

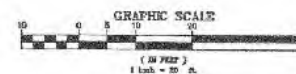






### PHASE 1 SCHEMATIC

#### LEGEND

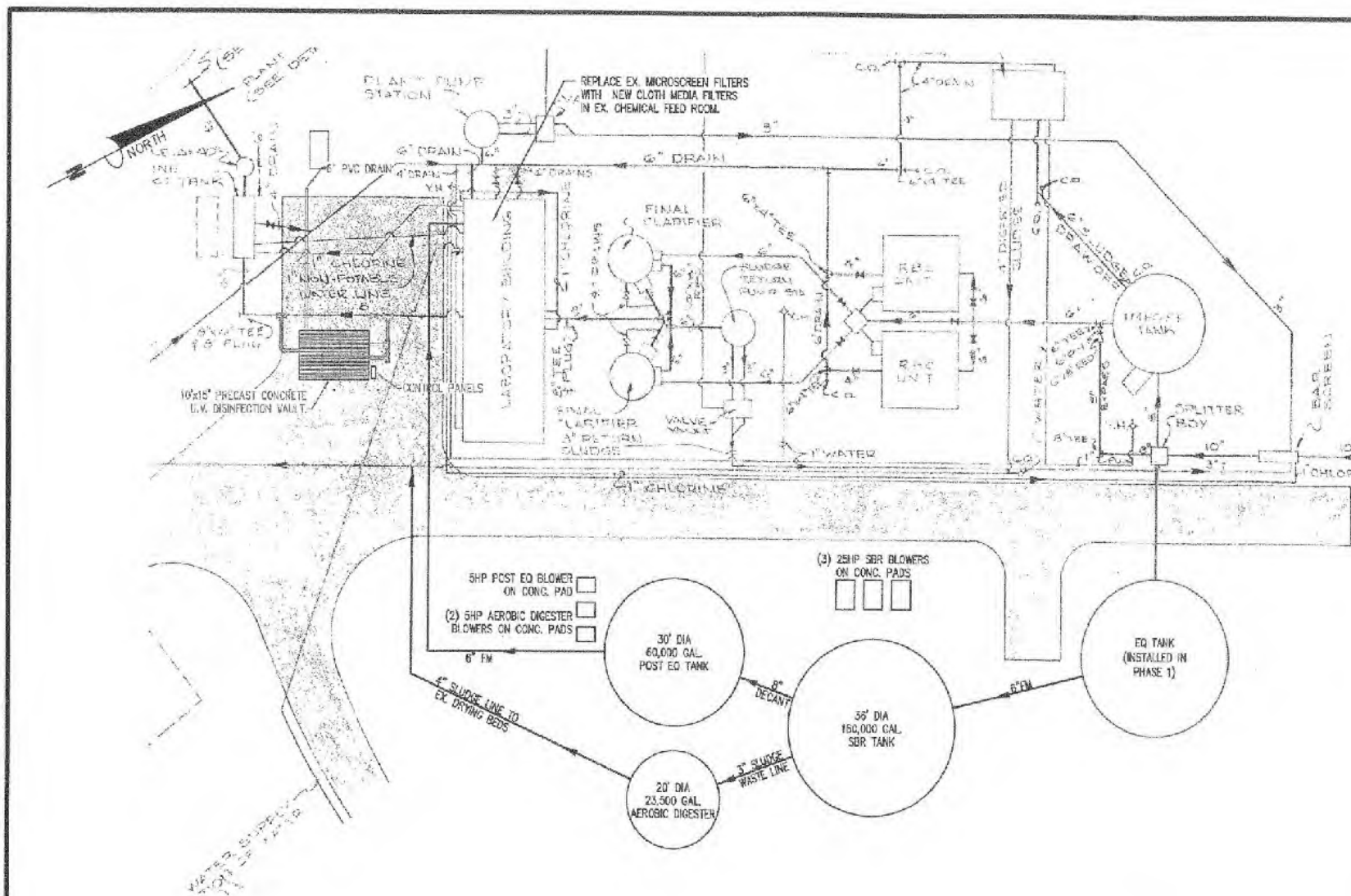


Elements Consulting Corp., Inc.  
 4700 MacArthur Blvd.  
 Suite 400  
 Irvine, CA 92618  
 Tel: 949/261-1776  
 Fax: 949/261-4883

PHASE 1 SCHEMATIC  
TOWN OF SURREY WWTP UPGRADES  
PRELIMINARY ENGINEERING REPORT

JMK DESIGN	DWD DRAWN	JMK CHKD
SCALE: 1/1"=1'-00"		
JOB No. 0142-01-002		
DATE: SEPT 2010		
FILE No. 0142-01-002		
SHEET 2 OF 3		

JAN DESIGN	2ND DRAFT	3RD DRAFT
SCALE 1/4" = 1'-0"		
JOB No. 6142-G-003		
DATE: SEPT. 2018		
FIG. No. 6142-G-PER		



## PHASE 2 SCHEMATIC

SCALE: 1"=20'

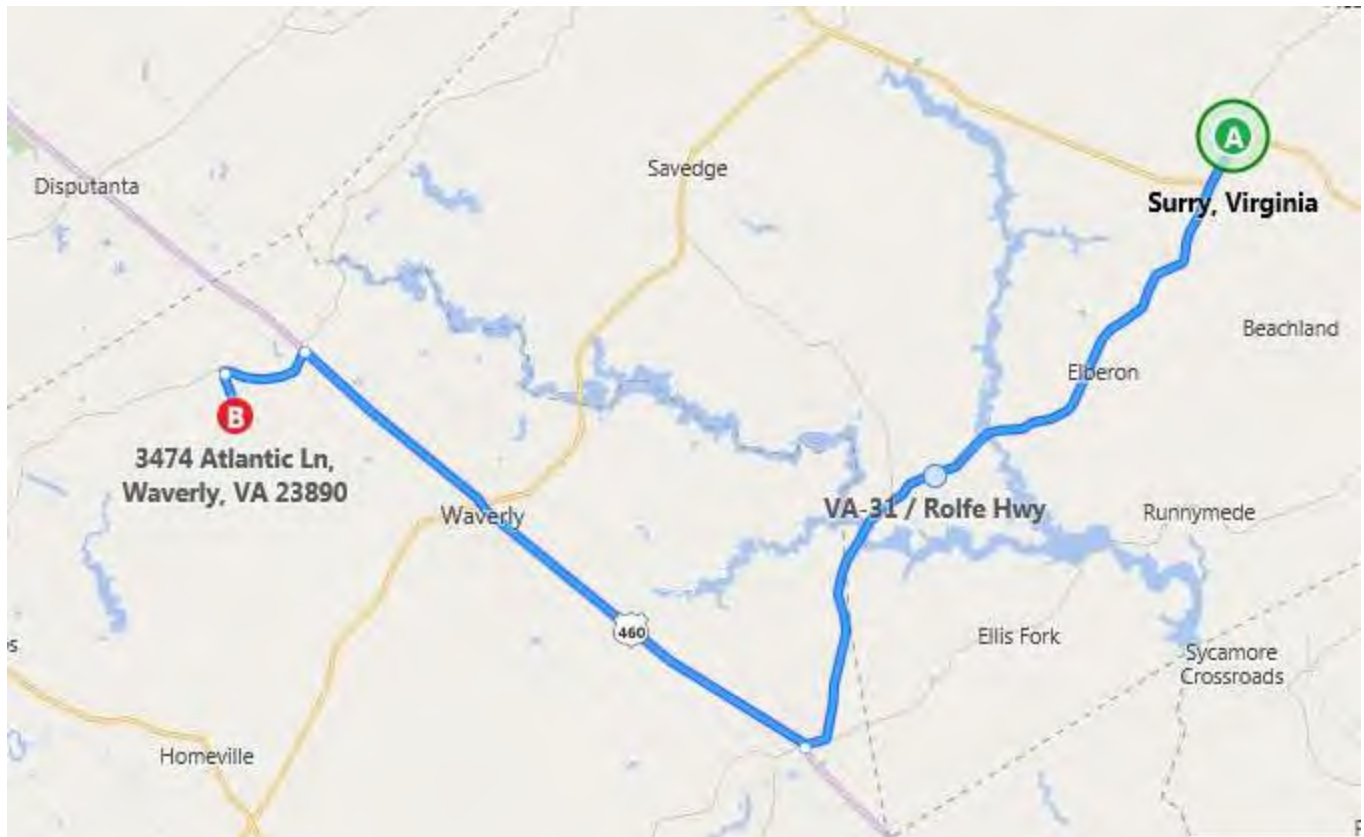


NOTE:

NOTE: BACKGROUND SITE PLAN IMAGE PROVIDED BY THE TOWN OF SLURRY FROM PLANS BY R. STUART ROYER & ASSOCIATES ENTITLED "TOWN OF SLURRY, VIRGINIA SEWERAGE IMPROVEMENTS" DATED OCTOBER, 1979, REVISED FEB. 5, 1981, AND MAY NOT MATCH EXISTING SITE CONDITIONS.

**Attachment C**

**Sludge Haul Route**



Sludge Haul Route: Leave Town of Surry WWTF and take Route 31 South to Route 460 West, proceeding to Route 602 Atlantic Lane.



**Attachment D**

**Flow Frequency Memorandum**

# MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY  
Piedmont Regional Office  
4949-A Cox Road Glen Allen, Virginia 23060

---

**SUBJECT:** Flow Frequency Determination / 303(d) Status  
Town of Surry STP – VA0061646

**TO:** Adam Eller

**FROM:** Jennifer Palmore, P.G.

**DATE:** May 19, 2016

**COPIES:** File

The Town of Surry's Wastewater Treatment Plant (WWTP) discharges to an unnamed tributary of Dark Swamp at rivermile 2CXBA000.27. Stream flow frequencies are required for use in developing effluent limitations for the VPDES permit.

At the discharge point, the receiving stream is shown as intermittent on the USGS Surry Quadrangle 7½' topographic map. The flow frequencies for intermittent streams are shown below.

**Unnamed tributary at discharge point:**

1Q30 = 0.0 cfs	High Flow 1Q10 = 0.0 cfs
1Q10 = 0.0 cfs	High Flow 7Q10 = 0.0 cfs
7Q10 = 0.0 cfs	High Flow 30Q10 = 0.0 cfs
30Q10 = 0.0 cfs	HM = 0.0 cfs
30Q5 = 0.0 cfs	

Due to its intermittent nature, the tributary is considered a Tier 1 water. It is appropriate to use effluent data, rather than ambient stream data, when calculating permit limits.

During the 2012 and draft 2014 305(b)/303(d) Integrated Water Quality Assessment, the unnamed tributary was assessed as a Category 2B water ("Waters are of concern to the state but no Water Quality Standard exists for a specific pollutant, or the water exceeds a state screening value or toxicity test.") The Fish Consumption Use is fully supporting with observed effects due to a VDH fish consumption advisory for kepone. The other Designated Uses were not assessed.

The WWTP was addressed in the Chesapeake Bay TMDL, which was approved by the EPA on 12/29/2010. The TMDL allocates loads for total nitrogen, total phosphorus, and total suspended solids to protect the dissolved oxygen and submerged aquatic vegetation acreage criteria in the Chesapeake Bay and its tidal tributaries. The discharge is included in the aggregated loads for non-significant wastewater dischargers in the oligohaline James River estuary (JMSOH). The nutrient allocations are administered through the Watershed Nutrient General Permit; the TSS allocations are considered aggregated and facilities with technology-based TSS limits are considered to be in conformance with the TMDL.

If you have any questions concerning this analysis, please let me know.

**Attachment E**

**2014 Stream Sanitation Analysis Memorandum**

**MEMORANDUM**  
**DEPARTMENT OF ENVIRONMENTAL QUALITY**  
***Piedmont Regional Office***

4949-A Cox Road, Glen Allen, VA 23060-6296

804/527-5020

**SUBJECT:** Stream Sanitation Analysis – Dark Swamp, UT  
Town of Surry WWTP (VA0061646)

**TO:** Adam Eller

**FROM:** Jennifer Palmore, P.G.

**DATE:** July 25, 2014

A request for a stream sanitation analysis for the Town of Surry wastewater treatment plant was received on 6/20/14. The town has requested an increase in their permitted design flow from 0.060 MGD to 0.099 MGD.

**Background**

The facility discharges to an unnamed tributary of Dark Swamp at river mile 2CXBA000.27. The receiving stream is shown as an intermittent tributary on the USGS Surry Quadrangle (see attached flow frequency memorandum.)

The modeling effort for the current 0.060 MGD facility was conducted on 4/20/1998 by D. X. Ren. During the site visit, Ren determined that the discharge is “just 0.1-0.3 mile away from Dark Swamp.” Based on this, “standard swamp effluent limits” were proposed, as follows:

Q = 0.06 MGD  
BOD<sub>5</sub> = 10.0 mg/L  
TSS = 10.0 mg/L  
DO = 3.0 mg/L  
Cl<sub>2</sub> = 0.011 mg/L

**Current Analysis**

Due to the proposed expansion, Adam Eller and I performed a site visit on July 22, 2014. The outfall location and structure are not expected to change. The stream was walked from the outfall downstream approximately 0.27 mile to its mouth at XHC - Dark Swamp, UT. Upstream the receiving stream has a well-defined channel with a sandy bottom; the water was clear and free of algae. As the stream flows downstream, the channel widens and slows and there was an increase in the amount of bottom algae. At the mouth of the stream, it enters a marshy braided area, as shown on the aerial photograph. Due to the marsh, the stream is considered unmodelable using Regional Model 4.1, therefore effluent limits from A.J. Anthony’s March 9, 1987 memorandum “Advisory Notification of Effluent Limits for Swamp and Marsh Waters” are recommended (see below). In addition, a minimum dissolved oxygen limit of 5.0 mg/L is suggested to protect the free-flowing portion of the stream.

Q = 0.099 MGD  
cBOD<sub>5</sub> = 10 mg/L  
TKN = 3.0 mg/L  
DO (min) = 5.0 mg/L

If you have any questions or need any additional information, please do not hesitate to contact me.



**Outfall 001**



**Near mouth of the tributary**





**Downstream**

**Aerial map**



**Attachment F**

**1988 Stream Sanitation Analysis Memorandum**



# MEMORANDUM

## State Water Control Board

2111 North Hamilton Street

P. O. Box 11143

Richmond, VA. 23230

Subject: Proposed Effluent Limits for Discharges of Town of Surry STP and Surry Village Apartment, Surry County, to UT to Dark Swamp, to Gray Creek to James River, James River Basin

To: Martin Ferguson, via Tom D. Modena

From: D.X.Ren *DX*

Date: April 20, 1988

Copies: Bob Ehrhart, File

The modeling efforts for discharges of Town of Surry, STP and Surry Village Apt. were made on Dec.19, 1980 and March 8, 1983 respectively. The approved effluent limits for these two discharges are:

Town of Surry STP -----	Surry Village Apt. -----
Q= 0.06 MGD	Q= 0.01 MGD
BOD5=14.0 mg/l (summer & spring)	BOD5= 9.0 mg/l
BOD5=30.0 mg/l (fall & winter)	TSS =30.0 mg/l
TSS= 30.0 mg/l	DO =6.5 mg/l
DO = 6.3 mg/l	

The site inspection conducted by PRO on April 14, 1988 indicated that these discharges are just 0.1-0.3 mile away from Dark Swamp. Updating the current effluent limits will be helpful for maintaining the swamp water quality. Based on this consideration, the following swamp standard effluent limits are proposed :

Town of Surry STP -----	Surry Village Apt. -----
Q= 0.06 MGD	Q= 0.01 MGD
BOD5=10.0 mg/l	BOD5= 9.0 mg/l
TSS = 10.0 mg/l	
TKN = 3.0 mg/l	
DO = 3.0 mg/l	
Cl2 = 0.011mg/l	

If you have any question concerning this proposal, please let me know.

**Attachment G**

**Effluent Data**

## FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99  
OMB Number 2040-0086

Town of Surry WWTF VA0061646

## A.11. Description of Treatment.

- a. What levels of treatment are provided? Check all that apply.

☒ Primary ☒ Secondary  
☒ Advanced ☐ Other. Describe: A.11 description for 0.099MGD facility; upgrade pending

- b. Indicate the following removal rates (as applicable):

Design BOD<sub>5</sub> removal or Design CBOD<sub>5</sub> removal 95.8 %  
 Design SS removal 95.8 %  
 Design P removal 87.5 %  
 Design N removal 92.5 %  
 Other \_\_\_\_\_ %

- c. What type of disinfection is used for the effluent from this outfall? If disinfection varies by season, please describe.

Ultraviolet Disinfection

If disinfection is by chlorination, is dechlorination used for this outfall?

☐ Yes ☐ No

- d. Does the treatment plant have post aeration?

☐ Yes ☒ No

**A.12. Effluent Testing Information.** All Applicants that discharge to waters of the US must provide effluent testing data for the following parameters. Provide the indicated effluent testing required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least three samples and must be no more than four and one-half years apart.

Outfall number: 001

Data from Jan 1, 2015 through Feb 29, 2016

PARAMETER	MAXIMUM DAILY VALUE		AVERAGE DAILY VALUE		
	Value	Units	Value	Units	Number of Samples
pH (Minimum)	6.6	s.u.			
pH (Maximum)	7.8	s.u.			
Flow Rate	0.197	MGD	0.135	MGD	CONTINUOUS
Temperature (Winter)	20.5	Celsius	14.1	Celsius	180
Temperature (Summer)	23.7	Celsius	21.9	Celsius	122

\* For pH please report a minimum and a maximum daily value

POLLUTANT	MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML / MDL
	Conc.	Units	Conc.	Units	Number of Samples		

## CONVENTIONAL AND NONCONVENTIONAL COMPOUNDS.

BIOCHEMICAL OXYGEN DEMAND (Report one)	BOD-5							
	CBOD-5	52	mg/L	6	mg/L	60	SM5210B	2 mg/L
<del>FECAL COLIFORM</del>	E. Coli	1474	#/100 ml	256	#/100 ml	120	Colilert	1
TOTAL SUSPENDED SOLIDS (TSS)		13.0	mg/L	6.74	mg/L	14	SM2540D	1.0 mg/L

## END OF PART A.

**REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE**

**ATTACHMENT A  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
WATER QUALITY CRITERIA MONITORING**

Effective January 1, 2012, all analyses shall be in accordance with 1VAC30-45, Certification for Noncommercial Environmental Laboratories, or 1VAC30-46, Accreditation for Commercial Environmental Laboratories.

A listing of Virginia Environmental Laboratory Accreditation Program (VELAP) certified and/or accredited laboratories can be found at the following website:

<http://www.dqs.state.va.us/DivisionofConsolidatedLaboratoryServices/Services/EnvironmentalLaboratoryCertification/tabid/1059/Default.aspx>

Please be advised that additional water quality analyses may be necessary and/or required for permitting purposes.

CASRN	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL <sup>(1)</sup>	REPORTING RESULTS	SAMPLE TYPE <sup>(2)</sup>	SAMPLE FREQUENCY
<b>METALS</b>						
7440-36-0	Antimony, dissolved	(3)	1.4	<1.00	G or C	1/5 YR
7440-38-2	Arsenic, dissolved	(3)	1.0	<1.00	G or C	1/5 YR
7440-43-9	Cadmium, dissolved	(3)	0.3	<0.05	G or C	1/5 YR
16065-83-1	Chromium III, dissolved <sup>(6)</sup>	(3)	3.6	<1.00	G or C	1/5 YR
18540-29-9	Chromium VI, dissolved <sup>(6)</sup>	(3)	1.6	<1.00	G or C	1/5 YR
7440-50-8	Copper, dissolved	(3)	0.50	1.92	G or C	1/5 YR
7439-92-1	Lead, dissolved	(3)	0.50	0.26	G or C	1/5 YR
7439-97-6	Mercury, dissolved	(3)	1.0	<0.10	G or C	1/5 YR
7440-02-0	Nickel, dissolved	(3)	0.94	1.27	G or C	1/5 YR
7782-49-2	Selenium, Total Recoverable	(3)	2.0	<0.50	G or C	1/5 YR
7440-22-4	Silver, dissolved	(3)	0.20	<0.20	G or C	1/5 YR
7440-28-0	Thallium, dissolved	(3)	(4)	<0.50	G or C	1/5 YR
7440-66-6	Zinc, dissolved	(3)	3.6	12.4	G or C	1/5 YR
<b>PESTICIDES/PCBs</b>						
309-00-2	Aldrin	608/625	0.05	<0.05	G or C	1/5 YR
57-74-9	Chlordane	608/625	0.2	<0.20	G or C	1/5 YR
2921-88-2	Chlorpyrifos (synonym = Dursban)	622	(4)	<0.100	G or C	1/5 YR
72-54-8	DDD	608/625	0.1	<0.05	G or C	1/5 YR
72-55-9	DDE	608/625	0.1	<0.05	G or C	1/5 YR
50-29-3	DDT	608/625	0.1	<0.05	G or C	1/5 YR

CASRN	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL <sup>(1)</sup>	REPORTING RESULTS	SAMPLE TYPE <sup>(2)</sup>	SAMPLE FREQUENCY
8065-48-3	Demeton (synonym = Dementon-O,S)	622	(4)	<0.100	G or C	1/5 YR
333-41-5	Diazinon	622	(4)	<0.100	G or C	1/5 YR
60-57-1	Dieldrin	608/625	0.1	<0.05	G or C	1/5 YR
959-98-8	Alpha-Endosulfan (synonym = Endosulfan I)	608/625	0.1	<0.05	G or C	1/5 YR
33213-65-9	Beta-Endosulfan (synonym = Endosulfan II)	608625	0.1	<0.05	G or C	1/5 YR
1031-07-8	Endosulfan Sulfate	608/625	0.1	<0.05	G or C	1/5 YR
72-20-8	Endrin	608/625	0.1	<0.05	G or C	1/5 YR
7421-93-4	Endrin Aldehyde	608/625	(4)	<0.05	G or C	1/5 YR
86-50-0	Guthion (synonym = Azinphos Methyl)	622	(4)	<0.100	G or C	1/5 YR
76-44-8	Heptachlor	608/625	0.05	<0.05	G or C	1/5 YR
1024-57-3	Heptachlor Epoxide	608/625	(4)	<0.05	G or C	1/5 YR
319-84-6	Hexachlorocyclohexane Alpha-BHC	608/625	(4)	<0.05	G or C	1/5 YR
319-85-7	Hexachlorocyclohexane Beta-BHC	608/625	(4)	<0.05	G or C	1/5 YR
58-89-9	Hexachlorocyclohexane Gamma-BHC (syn. = Lindane)	608/625	(4)	<0.05	G or C	1/5 YR
143-50-0	Kepone	8081 Extended/ 8270C/8270D	(4)	<0.40	G or C	1/5 YR
121-75-5	Malathion	614	(4)	<1	G or C	1/5 YR
72-43-5	Methoxychlor	608.2	(4)	<0.050	G or C	1/5 YR
2385-85-5	Mirex	8081 Extended/ 8270C/8270D	(4)	<0.05	G or C	1/5 YR
56-38-2	Parathion (synonym = Parathion Ethyl)	614	(4)	<1	G or C	1/5 YR
1336-36-3	PCB, total	608/625	7.0	<7.00	G or C	1/5 YR
8001-35-2	Toxaphene	608/625	5.0	<0.50	G or C	1/5 YR

## BASE NEUTRAL EXTRACTABLES

83-32-9	Acenaphthene	610/625	10.0	<10.0	G or C	1/5 YR
120-12-7	Anthracene	610/625	10.0	<10.0	G or C	1/5 YR
92-87-5	Benzidine	625	(4)	<10.0	G or C	1/5 YR
56-55-3	Benzo (a) anthracene	610/625	10.0	<10.0	G or C	1/5 YR
205-99-2	Benzo (b) fluoranthene	610/625	10.0	<10.0	G or C	1/5 YR
207-08-9	Benzo (k) fluoranthene	610/625	10.0	<10.0	G or C	1/5 YR
50-32-8	Benzo (a) pyrene	610/625	10.0	<10.0	G or C	1/5 YR
111-44-4	Bis 2-Chloroethyl Ether	625	(4)	<10.0	G or C	1/5 YR

CASRN	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL <sup>(1)</sup>	REPORTING RESULTS	SAMPLE TYPE <sup>(2)</sup>	SAMPLE FREQUENCY
108-60-1	Bis 2-Chloroisopropyl Ether	625	(4)	<10.0	G or C	1/5 YR
117-81-7	Bis 2-Ethylhexyl Phthalate (syn. = Di-2-Ethylhexyl Phthalate)	625	10.0	<10.0	G or C	1/5 YR
85-68-7	Butyl benzyl phthalate	625	10.0	<10.0	G or C	1/5 YR
91-58-7	2-Chloronaphthalene	625	(4)	<10.0	G or C	1/5 YR
218-01-9	Chrysene	610/625	10.0	<10.0	G or C	1/5 YR
53-70-3	Dibenzo (a,h) anthracene	610/625	20.0	<10.0	G or C	1/5 YR
95-50-1	1,2-Dichlorobenzene	602/624	10.0	<10.0	G or C	1/5 YR
541-73-1	1,3-Dichlorobenzene	602/624	10.0	<10.0	G or C	1/5 YR
106-46-7	1,4-Dichlorobenzene	602/624	10.0	<10.0	G or C	1/5 YR
91-94-1	3,3-Dichlorobenzidine	625	(4)	<10.0	G or C	1/5 YR
84-66-2	Diethyl phthalate	625	10.0	<10.0	G or C	1/5 YR
131-11-3	Dimethyl phthalate	625	(4)	<10.0	G or C	1/5 YR
84-74-2	Di-n-butyl Phthalate (synonym = Dibutyl Phthalate)	625	10.0	<10.0	G or C	1/5 YR
121-14-2	2,4-Dinitrotoluene	625	10.0	<10.0	G or C	1/5 YR
122-66-7	1,2-Diphenylhydrazine	625/ 8270C/8270D	(4)	<10.0	G or C	1/5 YR
206-44-0	Fluoranthene	610/625	10.0	<10.0	G or C	1/5 YR
86-73-7	Fluorene	610/625	10.0	<10.0	G or C	1/5 YR
118-74-1	Hexachlorobenzene	625	(4)	<10.0	G or C	1/5 YR
87-68-3	Hexachlorobutadiene	625	(4)	<10.0	G or C	1/5 YR
77-47-4	Hexachlorocyclopentadiene	625	(4)	<10.0	G or C	1/5 YR
67-72-1	Hexachloroethane	625	(4)	<10.0	G or C	1/5 YR
193-39-5	Indeno(1,2,3-cd)pyrene	610/625	20.0	<10.0	G or C	1/5 YR
78-59-1	Isophorone	625	10.0	<10.0	G or C	1/5 YR
98-95-3	Nitrobenzene	625	10.0	<10.0	G or C	1/5 YR
62-75-9	N-Nitrosodimethylamine	625	(4)	<10.0	G or C	1/5 YR
621-64-7	N-Nitrosodi-n-propylamine	625	(4)	<10.0	G or C	1/5 YR
86-30-6	N-Nitrosodiphenylamine	625	(4)	<10.0	G or C	1/5 YR
129-00-0	Pyrene	610/625	10.0	<10.0	G or C	1/5 YR
120-82-1	1,2,4-Trichlorobenzene	625	10.0	<10.0	G or C	1/5 YR

## VOLATILES

CASRN	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL <sup>(1)</sup>	REPORTING RESULTS	SAMPLE TYPE <sup>(2)</sup>	SAMPLE FREQUENCY
107-02-8	Acrolein	624	(4)	<50.0	G	1/5 YR
107-13-1	Acrylonitrile	624	(4)	<10.0	G	1/5 YR
71-43-2	Benzene	602/624	10.0	<10.0	G	1/5 YR
75-25-2	Bromoform	624	10.0	<10.0	G	1/5 YR
56-23-5	Carbon Tetrachloride	624	10.0	<10.0	G	1/5 YR
108-90-7	Chlorobenzene (synonym = Monochlorobenzene)	602/624	50.0	<10.0	G	1/5 YR
124-48-1	Chlorodibromomethane	624	10.0	<10.0	G	1/5 YR
67-66-3	Chloroform	624	10.0	<10.0	G	1/5 YR
75-27-4	Dichlorobromomethane	624	10.0	<10.0	G	1/5 YR
107-06-2	1,2-Dichloroethane	624	10.0	<10.0	G	1/5 YR
75-35-4	1,1-Dichloroethylene	624	10.0	<10.0	G	1/5 YR
156-60-5	1,2-trans-dichloroethylene	624	(4)	<10.0	G	1/5 YR
78-87-5	1,2-Dichloropropane	624	(4)	<10.0	G	1/5 YR
542-75-6	1,3-Dichloropropene	624	(4)	<20.0	G	1/5 YR
100-41-4	Ethylbenzene	602/624	10.0	<10.0	G	1/5 YR
74-83-9	Methyl Bromide (synonym = Bromomethane)	624	(4)	<10.0	G	1/5 YR
75-09-2	Methylene Chloride (synonym = Dichloromethane)	624	20.0	<10.0	G	1/5 YR
79-34-5	1,1,2,2-Tetrachloroethane	624	(4)	<10.0	G	1/5 YR
127-18-4	Tetrachloroethylene (synonym = Tetrachloroethene)	624	10.0	<10.0	G	1/5 YR
10-88-3	Toluene	602/624	10.0	<10.0	G	1/5 YR
79-00-5	1,1,2-Trichloroethane	624	(4)	<10.0	G	1/5 YR
79-01-6	Trichloroethylene (synonym = Trichloroethene)	624	10.0	<10.0	G	1/5 YR
75-01-4	Vinyl Chloride	624	10.0	<10.0	G	1/5 YR
ACID EXTRACTABLES						
95-57-8	2-Chlorophenol	625	10.0	<10.0	G or C	1/5 YR
120-83-2	2,4 Dichlorophenol	625	10.0	<10.0	G or C	1/5 YR
105-67-9	2,4 Dimethylphenol	625	10.0	<10.0	G or C	1/5 YR
51-28-5	2,4-Dinitrophenol	625	(4)	<10.0	G or C	1/5 YR
534-52-1	2-Methyl-4,6-Dinitrophenol	625	(4)	<10.0	G or C	1/5 YR
25154-52-3	Nonylphenol	ASTM D 7065-06	(4)	<10.0	G or C	1/5 YR



CASRN	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL <sup>(1)</sup>	REPORTING RESULTS	SAMPLE TYPE <sup>(2)</sup>	SAMPLE FREQUENCY
87-86-5	Pentachlorophenol	625	50.0	<10.0	G or C	1/5 YR
108-95-2	Phenol	625	10.0	<10.0	G or C	1/5 YR
88-06-2	2,4,6-Trichlorophenol	625	10.0	<10.0	G or C	1/5 YR
<b>MISCELLANEOUS</b>						
776-41-7	Ammonia as NH3-N	Lachat 10-107-06-1-C	200	0.62	C	1/5 YR
16887-00-6	Chloride	(3)	(4)	42.5	C	1/5 YR
7782-50-5	Chlorine, Total Residual	(3)	100	NA / UV	G	1/5 YR
57-12-5	Cyanide, Free <sup>(8)</sup>	ASTM 4282-02	10.0	<10	G	1/5 YR
N/A	<i>E. coli</i> / <i>Enterococcus</i> (N/CML)	(3)	(4)	12	G	1/5 YR
18496-25-8	Sulfide, dissolved <sup>(7)</sup>	ASTM D4658-09	100	<0.10	G or C	1/5 YR
60-10-5	Tributyltin	(5)	(4)	ND	G or C	1/5 YR
471-34-1	Hardness (mg/L as CaCO <sub>3</sub> )	(3)	(4)	40.6	G or C	1/5 YR

Will M. Gwaltney Jr. Mayor 4/12/16  
Name of Principal Executive Officer or Authorized Agent & Title

WILL M. Gwaltney Jr. Mayor 4/12/16  
Signature of Principal Executive Officer or Authorized Agent & Date

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations. See 18 U.S.C. Sec. 1001 and 33 U.S.C. Sec. 1319. (Penalties under these statutes may include fines up to \$10,000 and or maximum imprisonment of between 6 months and 5 years.)

**FOOTNOTES:**

- (1) Quantification level (QL) means the minimum levels, concentrations, or quantities of a target variable (e.g. target analyte) that can be reported with a specified degree of confidence in accordance with 1VAC30-45, Certification for Noncommercial Environmental Laboratories, or 1VAC30-46, Accreditation for Commercial Environmental Laboratories.

The quantification levels indicated for the metals are actually Specific Target Values developed for this permit. The Specific Target Value is the approximate value that may initiate a wasteload allocation analysis. Target values are not wasteload allocations or effluent limitations. The Specific Target Values are subject to change based on additional information such as hardness data, receiving stream flow, and design flows.

Units for the quantification level are micrograms/liter unless otherwise specified.

Quality control and quality assurance information (i.e. laboratory certificates of analysis) shall be submitted to document that the required quantification level has been attained.

- (2) Sample Type

G = Grab = An individual sample collected in less than 15 minutes. Substances specified with "grab" sample type shall only be collected as grabs. The permittee may analyze multiple grabs and report the average results provided that the individual grab results are also reported. For grab metals samples, the individual samples shall be filtered and preserved immediately upon collection.

C = Composite = A 4-hour composite unless otherwise specified. The composite shall be a combination of individual samples, taken proportional to flow, obtained at hourly or smaller time intervals. The individual samples may be of equal volume for flows that do not vary by +/- 10 percent over a 24-hour period.

- (3) A specific analytical method is not specified; however, an appropriate method to meet the QL shall be selected from any approved method presented in 40 CFR Part 136.
- (4) The QL is at the discretion of the permittee. If the test result is less than the method QL, a "<[QL]" shall be reported where the actual analytical test QL is substituted for [QL].
- (5) Analytical Methods: Analysis of Butyltins in Environmental Systems by the Virginia Institute of Marine Science, dated November 1996 (currently the only Virginia Environmental Laboratory Accreditation Program (VELAP) accredited method).
- (6) Both Chromium III and Chromium VI may be measured by the total chromium analysis. The total chromium analytical test QL shall be less than or equal to the lesser of the Chromium III or Chromium VI method QL listed above. If the result of the total chromium analysis is less than the analytical test QL, both Chromium III and Chromium VI can be reported as "<[QL]", where the actual analytical test QL is substituted for [QL].
- (7) Dissolved sulfide may be measured by the total sulfide analysis. The total sulfide analytical test QL shall be less than or equal to the dissolved sulfide method QL listed above. If the result of the total sulfide analysis is less than the analytical test QL, dissolved sulfide can be reported as "<[QL]", where the actual analytical test QL is substituted for [QL].
- (8) Free cyanide may be measured by the total cyanide analysis. The total cyanide analytical test QL shall be less than or equal to the free cyanide method QL listed above. If the result of the total cyanide analysis is less than the analytical test QL, free cyanide can be reported as "<[QL]", where the actual analytical test QL is substituted for [QL].

Facility Name:Surry Town of WWTF  
Permit No:VA0061646

Outfall Number	Parameter Code	Parameter Description	Quant Avg	Quanti Max	Conc Avg	Conc Min	Conc Max	Received Date
001	001	FLOW	0.051	0.065	NULL	NULL	NULL	10-Jan-2013
			0.084	0.2	NULL	NULL	NULL	08-Feb-2013
			0.079	0.157	NULL	NULL	NULL	11-Mar-2013
			0.081	0.108	NULL	NULL	NULL	09-Apr-2013
			0.066	0.087	NULL	NULL	NULL	09-May-2013
			0.067	0.094	NULL	NULL	NULL	10-Jun-2013
			0.076	0.205	NULL	NULL	NULL	10-Jul-2013
			0.0069	0.125	NULL	NULL	NULL	12-Aug-2013
			0.072	0.167	NULL	NULL	NULL	10-Sep-2013
			0.048	0.06	NULL	NULL	NULL	08-Oct-2013
			0.049	0.074	NULL	NULL	NULL	12-Nov-2013
			0.045	0.045	NULL	NULL	NULL	09-Dec-2013
			0.078	0.122	NULL	NULL	NULL	09-Jan-2014
			0.076	0.117	NULL	NULL	NULL	10-Feb-2014
			0.073	0.113	NULL	NULL	NULL	10-Mar-2014
			0.06	0.104	NULL	NULL	NULL	10-Apr-2014
			0.077	0.126	NULL	NULL	NULL	13-May-2014
			0.067	0.128	NULL	NULL	NULL	09-Jun-2014
			0.057	0.078	NULL	NULL	NULL	11-Jul-2014
			0.048	0.062	NULL	NULL	NULL	11-Aug-2014
			0.048	0.057	NULL	NULL	NULL	10-Sep-2014
			0.049	0.078	NULL	NULL	NULL	09-Oct-2014
			0.043	0.064	NULL	NULL	NULL	10-Nov-2014
			0.048	0.076	NULL	NULL	NULL	09-Dec-2014
			0.061	0.123	NULL	NULL	NULL	08-Jan-2015
			0.074	0.103	NULL	NULL	NULL	09-Feb-2015
			0.071	0.091	NULL	NULL	NULL	10-Mar-2015
			0.105	0.158	NULL	NULL	NULL	09-Apr-2015
			0.084	0.119	NULL	NULL	NULL	08-May-2015
			0.067	0.079	NULL	NULL	NULL	10-Jun-2015
			0.089	0.125	NULL	NULL	NULL	09-Jul-2015
			0.96	0.197	NULL	NULL	NULL	10-Aug-2015
			0.053	0.064	NULL	NULL	NULL	10-Sep-2015
			0.041	0.057	NULL	NULL	NULL	08-Oct-2015
			0.056	0.114	NULL	NULL	NULL	09-Nov-2015
			0.055	0.084	NULL	NULL	NULL	10-Dec-2015
			0.06	0.118	NULL	NULL	NULL	08-Jan-2016
			0.076	0.124	NULL	NULL	NULL	25-Feb-2016
			0.095	0.165	NULL	NULL	NULL	10-Mar-2016
			0.065	0.084	NULL	NULL	NULL	11-Apr-2016
			0.052	0.065	NULL	NULL	NULL	09-May-2016
			0.072	0.124	NULL	NULL	NULL	07-Jun-2016

002	pH	0.059	0.097	NULL	NULL	NULL	09-Jul-2016
		NULL	NULL	NULL	6.26	7.71	10-Jan-2013
		NULL	NULL	NULL	7.3	6.48	08-Feb-2013
		NULL	NULL	NULL	6.81	7.3	11-Mar-2013
		NULL	NULL	NULL	6.72	7.29	09-Apr-2013
		NULL	NULL	NULL	6.75	7.48	09-May-2013
		NULL	NULL	NULL	6.79	7.35	10-Jun-2013
		NULL	NULL	NULL	6.69	8.03	10-Jul-2013
		NULL	NULL	NULL	6.76	7.74	12-Aug-2013
		NULL	NULL	NULL	6.61	7.25	10-Sep-2013
		NULL	NULL	NULL	6.63	7.24	08-Oct-2013
		NULL	NULL	NULL	6.77	7.35	12-Nov-2013
		NULL	NULL	NULL	6.74	8.44	09-Dec-2013
		NULL	NULL	NULL	6.39	6.98	09-Jan-2014
		NULL	NULL	NULL	6.71	8.08	10-Feb-2014
		NULL	NULL	NULL	7.04	7.64	10-Mar-2014
		NULL	NULL	NULL	6.87	7.45	10-Apr-2014
		NULL	NULL	NULL	6.87	7.61	13-May-2014
		NULL	NULL	NULL	6.77	7.32	09-Jun-2014
		NULL	NULL	NULL	6.83	7.31	11-Jul-2014
		NULL	NULL	NULL	6.8	8.1	11-Aug-2014
		NULL	NULL	NULL	6.4	7.01	10-Sep-2014
		NULL	NULL	NULL	6.84	7.06	09-Oct-2014
		NULL	NULL	NULL	6.87	7.7	10-Nov-2014
		NULL	NULL	NULL	6.9	7.2	09-Dec-2014
		NULL	NULL	NULL	6.98	8.15	08-Jan-2015
		NULL	NULL	NULL	7	7.3	09-Feb-2015
		NULL	NULL	NULL	7	7.2	10-Mar-2015
		NULL	NULL	NULL	7	7.5	09-Apr-2015
		NULL	NULL	NULL	6.62	7.29	08-May-2015
		NULL	NULL	NULL	6.9	7.4	10-Jun-2015
		NULL	NULL	NULL	6.67	7.11	09-Jul-2015
		NULL	NULL	NULL	6.79	7.16	10-Aug-2015
		NULL	NULL	NULL	6.9	7.2	10-Sep-2015
		NULL	NULL	NULL	6.97	7.15	08-Oct-2015
		NULL	NULL	NULL	6.8	7.4	09-Nov-2015
		NULL	NULL	NULL	6.98	7.31	10-Dec-2015
		NULL	NULL	NULL	6.8	7.8	08-Jan-2016
		NULL	NULL	NULL	6.95	7.2	25-Feb-2016
		NULL	NULL	NULL	6.9	7.4	10-Mar-2016
		NULL	NULL	NULL	6.45	8.9	11-Apr-2016
		NULL	NULL	NULL	6.8	8	09-May-2016
		NULL	NULL	NULL	6.8	7.2	07-Jun-2016
		NULL	NULL	NULL	6.1	7.1	09-Jul-2016
				90th%	6.996	8.07	
				10th%	6.482	7.102	

004	TSS	700	700	3.8	NULL	3.8	10-Jan-2013
		5420	8520	11.35	NULL	15	08-Feb-2013
		1990	1990	5	NULL	5	11-Mar-2013
		1480	1480	5.2	NULL	5.2	09-Apr-2013
		1910	1910	7.9	NULL	7.9	09-May-2013
		1500	1500	6.5	NULL	6.5	10-Jun-2013
		630	630	2.7	NULL	2.7	10-Jul-2013
		1090	1090	4.5	NULL	4.5	12-Aug-2013
		840	840	3.1	NULL	3.1	10-Sep-2013
		590	590	3.7	NULL	3.7	08-Oct-2013
		850	850	4.8	NULL	4.8	12-Nov-2013
		1060	1060	5.1	NULL	5.1	09-Dec-2013
		990	990	3.4	NULL	3.4	09-Jan-2014
		1190	1190	3.7	NULL	3.7	10-Feb-2014
		740	740	3	NULL	3	10-Mar-2014
		1980	1980	9.2	NULL	9.2	10-Apr-2014
		1150	1150	4.6	NULL	4.6	13-May-2014
		2500	2500	11	NULL	11	09-Jun-2014
		470	470	2.3	NULL	2.3	11-Jul-2014
		370	370	2.1	NULL	2.1	11-Aug-2014
		600	60	3.7	NULL	3.7	10-Sep-2014
		300	300	1.8	NULL	1.8	09-Oct-2014
		530	530	3.4	NULL	3.4	10-Nov-2014
		870	870	4.4	NULL	4.4	09-Dec-2014
		710	710	3.6	NULL	3.6	08-Jan-2015
		1510	1510	5.4	NULL	5.4	09-Feb-2015
		2929	2929	9	NULL	9	10-Mar-2015
		4660	4700	12.5	NULL	14	09-Apr-2015
		2840	2840	10	NULL	10	08-May-2015
		3050	3050	13	NULL	13	10-Jun-2015
		870	870	2.8	NULL	2.8	09-Jul-2015
		2010	3180	7.8	NULL	12	10-Aug-2015
		610	610	3.2	NULL	3.2	10-Sep-2015
		830	830	5.1	NULL	5.1	08-Oct-2015
		730	730	4.6	NULL	4.6	09-Nov-2015
		1220	1220	5.3	NULL	5.3	10-Dec-2015
		1200	1200	6.1	NULL	6.1	08-Jan-2016
		1420	1420	4.8	NULL	4.8	25-Feb-2016
		1560	1560	4.8	NULL	4.8	10-Mar-2016
		1060	1060	5.6	NULL	5.6	11-Apr-2016
		1500	1500	8.6	NULL	8.6	09-May-2016
		1860	2640	7	NULL	9.7	07-Jun-2016
		570	570	3.6	NULL	3.6	09-Jul-2016
005	CL2, TOTAL	NULL	NULL	<QL	NULL	<QL	10-Jan-2013
		NULL	NULL	<QL	NULL	<QL	08-Feb-2013
		NULL	NULL	<QL	NULL	<QL	11-Mar-2013

			NULL	NULL	<QL	NULL	<QL	09-Apr-2013
			NULL	NULL	<QL	NULL	<QL	09-May-2013
			NULL	NULL	<QL	NULL	<QL	10-Jun-2013
			NULL	NULL	<QL	NULL	<QL	10-Jul-2013
			NULL	NULL	<QL	NULL	<QL	12-Aug-2013
			NULL	NULL	<QL	NULL	<QL	10-Sep-2013
			NULL	NULL	<QL	NULL	<QL	08-Oct-2013
			NULL	NULL	<QL	NULL	<QL	12-Nov-2013
			NULL	NULL	<QL	NULL	<QL	09-Dec-2013
			NULL	NULL	<QL	NULL	<QL	09-Jan-2014
			NULL	NULL	<QL	NULL	<QL	10-Feb-2014
			NULL	NULL	<QL	NULL	<QL	10-Mar-2014
			NULL	NULL	<QL	NULL	<QL	10-Apr-2014
			NULL	NULL	<QL	NULL	<QL	13-May-2014
	007	DO	NULL	NULL	NULL	7.81	NULL	10-Jan-2013
			NULL	NULL	NULL	8.22	NULL	08-Feb-2013
			NULL	NULL	NULL	8.1	NULL	11-Mar-2013
			NULL	NULL	NULL	8.61	NULL	09-Apr-2013
			NULL	NULL	NULL	8.74	NULL	09-May-2013
			NULL	NULL	NULL	7.84	NULL	10-Jun-2013
			NULL	NULL	NULL	6.9	NULL	10-Jul-2013
			NULL	NULL	NULL	6.83	NULL	12-Aug-2013
			NULL	NULL	NULL	6.71	NULL	10-Sep-2013
			NULL	NULL	NULL	6.8	NULL	08-Oct-2013
			NULL	NULL	NULL	7.12	NULL	12-Nov-2013
			NULL	NULL	NULL	7.42	NULL	09-Dec-2013
			NULL	NULL	NULL	6.65	NULL	09-Jan-2014
			NULL	NULL	NULL	7.62	NULL	10-Feb-2014
			NULL	NULL	NULL	7.51	NULL	10-Mar-2014
			NULL	NULL	NULL	8.54	NULL	10-Apr-2014
			NULL	NULL	NULL	8.54	NULL	13-May-2014
			NULL	NULL	NULL	6.47	NULL	09-Jun-2014
			NULL	NULL	NULL	6.95	NULL	11-Jul-2014
			NULL	NULL	NULL	6.65	NULL	11-Aug-2014
			NULL	NULL	NULL	6.74	NULL	10-Sep-2014
			NULL	NULL	NULL	6.8	NULL	09-Oct-2014
			NULL	NULL	NULL	6.93	NULL	10-Nov-2014
			NULL	NULL	NULL	7.31	NULL	09-Dec-2014
			NULL	NULL	NULL	7.2	NULL	08-Jan-2015
			NULL	NULL	NULL	7.37	NULL	09-Feb-2015
			NULL	NULL	NULL	7.6	NULL	10-Mar-2015
			NULL	NULL	NULL	8	NULL	09-Apr-2015
			NULL	NULL	NULL	6.9	NULL	08-May-2015
			NULL	NULL	NULL	6.6	NULL	10-Jun-2015
			NULL	NULL	NULL	6.88	NULL	09-Jul-2015
			NULL	NULL	NULL	6.6	NULL	10-Aug-2015

039	AMMONIA, AS N	NULL	NULL	NULL	7.2	NULL	10-Sep-2015
		NULL	NULL	NULL	6.8	NULL	08-Oct-2015
		NULL	NULL	NULL	7	NULL	09-Nov-2015
		NULL	NULL	NULL	6.4	NULL	10-Dec-2015
		NULL	NULL	NULL	6.4	NULL	08-Jan-2016
		NULL	NULL	NULL	7.12	NULL	25-Feb-2016
		NULL	NULL	NULL	7.1	NULL	10-Mar-2016
		NULL	NULL	NULL	6.71	NULL	11-Apr-2016
		NULL	NULL	NULL	7	NULL	09-May-2016
		NULL	NULL	NULL	6.8	NULL	07-Jun-2016
		NULL	NULL	NULL	6.8	NULL	09-Jul-2016
		NULL	NULL	0.23	NULL	0.23	10-Jan-2013
		NULL	NULL	0.37	NULL	0.37	08-Feb-2013
		NULL	NULL	0.15	NULL	0.15	11-Mar-2013
		NULL	NULL	0.28	NULL	0.28	09-Apr-2013
		NULL	NULL	<QL	NULL	<QL	09-May-2013
		NULL	NULL	0.35	NULL	0.35	10-Jun-2013
		NULL	NULL	0.1	NULL	0.1	10-Jul-2013
		NULL	NULL	0.1	NULL	0.1	12-Aug-2013
		NULL	NULL	0.1	NULL	0.1	10-Sep-2013
		NULL	NULL	<0.10	NULL	<0.10	08-Oct-2013
		NULL	NULL	0.2	NULL	0.2	12-Nov-2013
		NULL	NULL	0.24	NULL	0.24	09-Dec-2013
		NULL	NULL	2.77	NULL	2.77	09-Jan-2014
		NULL	NULL	0.39	NULL	0.39	10-Feb-2014
		NULL	NULL	0.25	NULL	0.25	10-Mar-2014
		NULL	NULL	0.18	NULL	0.18	10-Apr-2014
		NULL	NULL	0.32	NULL	0.32	13-May-2014
		NULL	NULL	<QL	NULL	<QL	09-Jun-2014
		NULL	NULL	7.1	NULL	7.1	11-Jul-2014
		NULL	NULL	0.97	NULL	0.97	11-Aug-2014
		NULL	NULL	0.25	NULL	0.25	10-Sep-2014
		NULL	NULL	0.21	NULL	0.21	09-Oct-2014
		NULL	NULL	0.18	NULL	0.18	10-Nov-2014
		NULL	NULL	0.18	NULL	0.18	09-Dec-2014
		NULL	NULL	0.52	NULL	0.52	08-Jan-2015
		NULL	NULL	0.27	NULL	0.27	09-Feb-2015
		NULL	NULL	0.22	NULL	0.22	10-Mar-2015
		NULL	NULL	0.56	NULL	0.56	09-Apr-2015
		NULL	NULL	0.87	NULL	0.87	08-May-2015
		NULL	NULL	1.43	NULL	1.43	10-Jun-2015
		NULL	NULL	0.54	NULL	0.54	09-Jul-2015
		NULL	NULL	<QL	NULL	<QL	10-Aug-2015
		NULL	NULL	0.58	NULL	0.58	10-Sep-2015
		NULL	NULL	0.6	NULL	0.6	08-Oct-2015
		NULL	NULL	0.34	NULL	0.34	09-Nov-2015



068	TKN (N-KJEL)	NULL	NULL	0.43	NULL	0.43	10-Dec-2015
		NULL	NULL	0.32	NULL	0.32	08-Jan-2016
		NULL	NULL	<QL	NULL	<QL	25-Feb-2016
		NULL	NULL	0.26	NULL	0.26	10-Mar-2016
		NULL	NULL	1.51	NULL	1.51	11-Apr-2016
		NULL	NULL	1.56	NULL	1.56	09-May-2016
		NULL	NULL	0.43	NULL	0.52	07-Jun-2016
		NULL	NULL	0.29	NULL	0.29	09-Jul-2016
068	TKN (N-KJEL)	430	720	2.18	NULL	3.4	10-Jan-2013
		580	940	1.88	NULL	2.37	08-Feb-2013
		490	650	1.65	NULL	2.2	11-Mar-2013
		500	670	1.53	NULL	1.92	09-Apr-2013
		360	630	1.52	NULL	2.51	09-May-2013
		770	1650	3.13	NULL	6.91	10-Jun-2013
		730	1310	2.72	NULL	3.76	10-Jul-2013
		580	1360	1.87	NULL	2.87	12-Aug-2013
		140	220	0.78	NULL	1.05	10-Sep-2013
		<110	160	<0.62	NULL	0.97	08-Oct-2013
		220	400	1.1	NULL	1.85	12-Nov-2013
		220	220	1.37	NULL	3.97	09-Dec-2013
		1140	1140	4.22	NULL	4.22	09-Jan-2014
		540	780	1.93	NULL	2.58	10-Feb-2014
		950	2800	3.3	NULL	9.5	10-Mar-2014
		290	380	1.38	NULL	1.87	10-Apr-2014
		680	810	1.9	NULL	2.06	13-May-2014
		950	1130	3.93	NULL	4.33	09-Jun-2014
		2910	6480	13.2	NULL	29	11-Jul-2014
		360	730	2.09	NULL	4.37	11-Aug-2014
		480	1350	2.77	NULL	7.77	10-Sep-2014
		<140	260	<0.67	NULL	1.19	09-Oct-2014
		0.13	0.019	0.77	NULL	1.07	10-Nov-2014
		0.15	0.19	0.8	NULL	1.27	09-Dec-2014
		0.19	0.38	0.86	NULL	1.93	08-Jan-2015
		0.2	0.26	0.76	NULL	0.93	09-Feb-2015
		400	510	1.58	NULL	1.95	10-Mar-2015
		880	1032	2.3	NULL	3.1	09-Apr-2015
		910	1080	3.13	NULL	3.8	08-May-2015
		670	730	2.7	NULL	2.7	10-Jun-2015
		430	710	1.34	NULL	2.07	09-Jul-2015
		520	770	1.71	NULL	2.25	10-Aug-2015
		160	430	0.86	NULL	2.28	10-Sep-2015
		60	80	0.5	NULL	0.5	08-Oct-2015
		150	250	0.95	NULL	1.22	09-Nov-2015
		180	260	0.8	NULL	1.12	10-Dec-2015
		400	1100	1.32	NULL	2.46	08-Jan-2016
		360	590	1.4	NULL	2	25-Feb-2016

		1210	2510	3.3	NULL	8.4	10-Mar-2016
		630	1000	3.08	NULL	5.31	11-Apr-2016
		770	1290	4	NULL	6.8	09-May-2016
		710	2010	2.2	NULL	5.6	07-Jun-2016
		360	550	1.66	NULL	2.58	09-Jul-2016
120	E.COLI	NULL	NULL	359	NULL	NULL	10-Jan-2013
		NULL	NULL	392	NULL	NULL	08-Feb-2013
		NULL	NULL	27	NULL	NULL	11-Mar-2013
		NULL	NULL	823	NULL	NULL	09-Apr-2013
		NULL	NULL	120	NULL	NULL	09-May-2013
		NULL	NULL	284	NULL	NULL	10-Jun-2013
		NULL	NULL	454	NULL	NULL	10-Jul-2013
		NULL	NULL	302	NULL	NULL	12-Aug-2013
		NULL	NULL	316	NULL	NULL	10-Sep-2013
		NULL	NULL	>2420	NULL	NULL	08-Oct-2013
		NULL	NULL	1643	NULL	NULL	12-Nov-2013
		NULL	NULL	80	NULL	NULL	09-Dec-2013
		NULL	NULL	100	NULL	NULL	09-Jan-2014
		NULL	NULL	98	NULL	NULL	10-Feb-2014
		NULL	NULL	1051	NULL	NULL	10-Mar-2014
		NULL	NULL	189	NULL	NULL	10-Apr-2014
		NULL	NULL	306	NULL	NULL	13-May-2014
		NULL	NULL	1428	NULL	NULL	09-Jun-2014
		NULL	NULL	117	NULL	NULL	11-Jul-2014
		NULL	NULL	37	NULL	NULL	11-Aug-2014
		NULL	NULL	10	NULL	NULL	10-Sep-2014
		NULL	NULL	16	NULL	NULL	09-Oct-2014
		NULL	NULL	64	NULL	NULL	10-Nov-2014
		NULL	NULL	88	NULL	NULL	09-Dec-2014
		NULL	NULL	15	NULL	NULL	08-Jan-2015
		NULL	NULL	74	NULL	NULL	09-Feb-2015
		NULL	NULL	34	NULL	NULL	10-Mar-2015
		NULL	NULL	211	NULL	NULL	09-Apr-2015
		NULL	NULL	146	NULL	NULL	08-May-2015
		NULL	NULL	1474	NULL	NULL	10-Jun-2015
		NULL	NULL	175	NULL	NULL	09-Jul-2015
		NULL	NULL	41	NULL	NULL	10-Aug-2015
		NULL	NULL	256	NULL	NULL	10-Sep-2015
		NULL	NULL	54	NULL	NULL	08-Oct-2015
		NULL	NULL	31	NULL	NULL	09-Nov-2015
		NULL	NULL	57	NULL	NULL	10-Dec-2015
		NULL	NULL	73	NULL	NULL	08-Jan-2016
		NULL	NULL	69	NULL	NULL	25-Feb-2016
		NULL	NULL	870	NULL	NULL	10-Mar-2016
		NULL	NULL	2.36	NULL	NULL	11-Apr-2016
		NULL	NULL	113	NULL	NULL	09-May-2016

		NULL	NULL	10	NULL	NULL	07-Jun-2016
		NULL	NULL	27	NULL	NULL	09-Jul-2016
157	CL2, TOTAL CONTACT	NULL	NULL	NULL	0.8	NULL	10-Jan-2013
		NULL	NULL	NULL	0.8	NULL	08-Feb-2013
		NULL	NULL	NULL	1	NULL	11-Mar-2013
		NULL	NULL	NULL	0.9	NULL	09-Apr-2013
		NULL	NULL	NULL	1	NULL	09-May-2013
		NULL	NULL	NULL	0.9	NULL	10-Jun-2013
		NULL	NULL	NULL	0.8	NULL	10-Jul-2013
		NULL	NULL	NULL	0.8	NULL	12-Aug-2013
		NULL	NULL	NULL	1	NULL	10-Sep-2013
		NULL	NULL	NULL	1	NULL	08-Oct-2013
		NULL	NULL	NULL	0.8	NULL	12-Nov-2013
		NULL	NULL	NULL	0.9	NULL	09-Dec-2013
		NULL	NULL	NULL	0.8	NULL	09-Jan-2014
		NULL	NULL	NULL	0.8	NULL	10-Feb-2014
		NULL	NULL	NULL	0.9	NULL	10-Mar-2014
		NULL	NULL	NULL	0.9	NULL	10-Apr-2014
		NULL	NULL	NULL	0.8	NULL	13-May-2014
159	CBOD5	1060	1700	5.25	NULL	8	10-Jan-2013
		1720	3406	5.2	NULL	6	08-Feb-2013
		1300	1300	4.5	NULL	6	11-Mar-2013
		1450	1670	4.5	NULL	5	09-Apr-2013
		1000	1150	4.25	NULL	5	09-May-2013
		1410	1770	560	NULL	7	10-Jun-2013
		2310	5570	8	NULL	16	10-Jul-2013
		1340	2150	4.8	NULL	9	12-Aug-2013
		400	580	2.25	NULL	3	10-Sep-2013
		430	500	2.5	NULL	3	08-Oct-2013
		760	1850	3.6	NULL	7	12-Nov-2013
		560	850	3.25	NULL	5	09-Dec-2013
		1690	1690	5.75	NULL	5.75	09-Jan-2014
		1002	1820	3.8	NULL	6	10-Feb-2014
		1900	2800	6.75	NULL	14	10-Mar-2014
		1010	1480	5	NULL	8	10-Apr-2014
		1690	1970	5.2	NULL	6	13-May-2014
		980	1190	4	NULL	5	09-Jun-2014
		3880	13180	17.25	NULL	17.25	11-Jul-2014
		700	1140	4	NULL	6	11-Aug-2014
		4560	16540	26.3	NULL	95	10-Sep-2014
		490	650	2.5	NULL	3	09-Oct-2014
		360	490	2.2	NULL	3	10-Nov-2014
		720	1180	3.75	NULL	6	09-Dec-2014
		640	1320	2.6	NULL	4	08-Jan-2015
		2170	5960	8.75	NULL	25	09-Feb-2015

			1090	1630	4.25	NULL	5	10-Mar-2015
			7860	22040	18.5	NULL	52	09-Apr-2015
			2590	3840	9	NULL	13	08-May-2015
			1560	1960	6.2	NULL	7	10-Jun-2015
			1210	1930	3.8	NULL	5	09-Jul-2015
			1540	2860	5	NULL	8	10-Aug-2015
			530	760	2.8	NULL	4	10-Sep-2015
			300	450	2.67	NULL	3	08-Oct-2015
			460	850	2.6	NULL	4	09-Nov-2015
			810	1150	3.75	NULL	5	10-Dec-2015
			1140	2680	3.8	NULL	6	08-Jan-2016
			1240	1480	5	NULL	6	25-Feb-2016
			3380	5680	9	NULL	19	10-Mar-2016
			2390	6760	11.6	NULL	35	11-Apr-2016
			1580	3790	8.25	NULL	20	09-May-2016
			3040	6500	10.8	NULL	26	07-Jun-2016
			720	1060	3.25	NULL	5	09-Jul-2016
	196	ZINC, TOTAL RECOVER ABLE	NULL	NULL	18	NULL	18	10-Jan-2013
			NULL	NULL	25	NULL	25	08-Feb-2013
			NULL	NULL	18	NULL	18	11-Mar-2013
			NULL	NULL	23	NULL	23	09-Apr-2013
			NULL	NULL	24.5	NULL	27	09-May-2013
			NULL	NULL	22	NULL	22	10-Jun-2013
			NULL	NULL	24	NULL	24	10-Jul-2013
			NULL	NULL	45	NULL	45	12-Aug-2013
			NULL	NULL	28	NULL	28	10-Sep-2013
			NULL	NULL	22	NULL	22	08-Oct-2013
			NULL	NULL	25	NULL	25	12-Nov-2013
			NULL	NULL	33	NULL	33	09-Dec-2013
			NULL	NULL	39	NULL	39	09-Jan-2014
			NULL	NULL	48	NULL	48	10-Feb-2014
			NULL	NULL	48	NULL	48	10-Mar-2014
			NULL	NULL	5	NULL	5	10-Apr-2014
			NULL	NULL	52	NULL	52	13-May-2014
			NULL	NULL	26	NULL	26	09-Jun-2014
			NULL	NULL	30	NULL	30	11-Jul-2014
			NULL	NULL	36	NULL	36	11-Aug-2014
			NULL	NULL	25	NULL	25	10-Sep-2014
			NULL	NULL	23	NULL	23	09-Oct-2014
			NULL	NULL	22	NULL	22	10-Nov-2014
			NULL	NULL	37	NULL	37	09-Dec-2014
			NULL	NULL	22	NULL	22	08-Jan-2015
			NULL	NULL	18	NULL	18	09-Feb-2015
			NULL	NULL	24	NULL	24	10-Mar-2015

		NULL	NULL	15	NULL	15	09-Apr-2015
		NULL	NULL	18	NULL	18	08-May-2015
		NULL	NULL	25	NULL	25	10-Jun-2015
		NULL	NULL	18	NULL	18	09-Jul-2015
		NULL	NULL	16	NULL	16	10-Aug-2015
		NULL	NULL	21	NULL	21	10-Sep-2015
		NULL	NULL	21	NULL	21	08-Oct-2015
		NULL	NULL	25	NULL	25	09-Nov-2015
		NULL	NULL	28	NULL	28	10-Dec-2015
		NULL	NULL	26	NULL	26	08-Jan-2016
		NULL	NULL	16	NULL	16	25-Feb-2016
		NULL	NULL	15	NULL	15	10-Mar-2016
		NULL	NULL	14	NULL	14	11-Apr-2016
		NULL	NULL	21	NULL	21	09-May-2016
		NULL	NULL	17	NULL	20	07-Jun-2016
		NULL	NULL	16	NULL	16	09-Jul-2016
203	COPPER, TOTAL RECOVER ABLE	NULL	NULL	7	NULL	7	10-Jan-2013
		NULL	NULL	7	NULL	7	08-Feb-2013
		NULL	NULL	5	NULL	5	11-Mar-2013
		NULL	NULL	6	NULL	6	09-Apr-2013
		NULL	NULL	6.5	NULL	7	09-May-2013
		NULL	NULL	7	NULL	7	10-Jun-2013
		NULL	NULL	7	NULL	7	10-Jul-2013
		NULL	NULL	12	NULL	12	12-Aug-2013
		NULL	NULL	4.5	NULL	4.5	10-Sep-2013
		NULL	NULL	6	NULL	6	08-Oct-2013
		NULL	NULL	6	NULL	6	12-Nov-2013
		NULL	NULL	8	NULL	8	09-Dec-2013
		NULL	NULL	9	NULL	9	09-Jan-2014
		NULL	NULL	8	NULL	8	10-Feb-2014
		NULL	NULL	10	NULL	10	10-Mar-2014
		NULL	NULL	2	NULL	2	10-Apr-2014
		NULL	NULL	13	NULL	13	13-May-2014
		NULL	NULL	8	NULL	8	09-Jun-2014
		NULL	NULL	8	NULL	8	11-Jul-2014
		NULL	NULL	9	NULL	9	11-Aug-2014
		NULL	NULL	58	NULL	58	10-Sep-2014
		NULL	NULL	47	NULL	47	09-Oct-2014
		NULL	NULL	6	NULL	6	10-Nov-2014
		NULL	NULL	8	NULL	8	09-Dec-2014
		NULL	NULL	6	NULL	6	08-Jan-2015
		NULL	NULL	5	NULL	5	09-Feb-2015
		NULL	NULL	6	NULL	6	10-Mar-2015
		NULL	NULL	5	NULL	5	09-Apr-2015

			NULL	NULL	7	NULL	7	08-May-2015
			NULL	NULL	9	NULL	9	10-Jun-2015
			NULL	NULL	6	NULL	6	09-Jul-2015
			NULL	NULL	6	NULL	6	10-Aug-2015
			NULL	NULL	7	NULL	7	10-Sep-2015
			NULL	NULL	8	NULL	8	08-Oct-2015
			NULL	NULL	6	NULL	6	09-Nov-2015
			NULL	NULL	10	NULL	10	10-Dec-2015
			NULL	NULL	7	NULL	7	08-Jan-2016
			NULL	NULL	3	NULL	3	25-Feb-2016
			NULL	NULL	3	NULL	3	10-Mar-2016
			NULL	NULL	4	NULL	4	11-Apr-2016
			NULL	NULL	7	NULL	7	09-May-2016
			NULL	NULL	5	NULL	5	07-Jun-2016
			NULL	NULL	6	NULL	6	09-Jul-2016
	213	CL2, INST TECH MIN LIMIT	NULL	NULL	NULL	0.8	NULL	10-Jan-2013
			NULL	NULL	NULL	0.8	NULL	08-Feb-2013
			NULL	NULL	NULL	1	NULL	11-Mar-2013
			NULL	NULL	NULL	0.9	NULL	09-Apr-2013
			NULL	NULL	NULL	1	NULL	09-May-2013
			NULL	NULL	NULL	0.9	NULL	10-Jun-2013
			NULL	NULL	NULL	0.8	NULL	10-Jul-2013
			NULL	NULL	NULL	0.8	NULL	12-Aug-2013
			NULL	NULL	NULL	1	NULL	10-Sep-2013
			NULL	NULL	NULL	1	NULL	08-Oct-2013
			NULL	NULL	NULL	0.8	NULL	12-Nov-2013
			NULL	NULL	NULL	0.9	NULL	09-Dec-2013
			NULL	NULL	NULL	0.8	NULL	09-Jan-2014
			NULL	NULL	NULL	0.8	NULL	10-Feb-2014
			NULL	NULL	NULL	0.9	NULL	10-Mar-2014
			NULL	NULL	NULL	0.9	NULL	10-Apr-2014
			NULL	NULL	NULL	0.8	NULL	13-May-2014
872		SULFIDE, DISSOLVE D (AS S)	NULL	NULL	NULL	NULL	NULL	NULL
			NULL	NULL	<0.05	NULL	<0.05	21-Jul-2014
			NULL	NULL	<0.05	NULL	<0.05	09-Jan-2014
			NULL	NULL	<0.05	NULL	<0.05	28-Oct-2014
			NULL	NULL	NULL	NULL	NULL	NULL
			NULL	NULL	<0.05	NULL	<0.05	08-Jan-2016
			NULL	NULL	0.05	NULL	0.05	15-Jul-2016

**Attachment H**

**Effluent Limitations Analysis**



# MSTRANTI DATA SOURCE REPORT

Stream Information	
Mean Hardness	All Stream Information is considered the same as the Effluent Information due to the zero low flow / intermittent nature of the receiving stream.
90% Temperature (annual)	
90% Temperature (wet season)	
90% Maximum pH	
10% Maximum pH	
Tier Designation	Tier 1, per 2016 Flow Frequency Memorandum.
Stream Flows	
All Data	From 2016 Flow Frequency Memorandum.
Mixing Information	
All Data	No mixing is allowed due to the intermittent nature of the receiving stream (per Flow Frequency Memorandum).
Effluent Information	
Mean Hardness	40.6 mg/L per effluent data reported on application (Attachment A Water Quality Criteria Monitoring form).
90% Temperature (annual)	Maximum temperature reported on application (EPA Form 2A).
90% Maximum pH	Calculated from data reported on DMR's submitted between and January 2013 and August 2016.
10% Maximum pH	
Discharge Flow	Existing facility is 0.060 MGD; however, the design flow expansion to 0.99 MGD, which has been previously approved (2015 permit modification), will also be included.

Data Location:

Flow Frequency Memorandum – Attachment D  
Effluent Information – Attachment G

# FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: **Town of Surry WWTP**

Permit No.: **VA0061646**

Receiving Stream: **Dark Swamp UT**

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	40.6 mg/L	1Q10 (Annual) =	0 MGD	Annual - 1Q10 Mix =	0 %	Mean Hardness (as CaCO3) =	40.6 mg/L
90% Temperature (Annual) =	23.7 deg C	7Q10 (Annual) =	0 MGD	- 7Q10 Mix =	0 %	90% Temp (Annual) =	23.7 deg C
90% Temperature (Wet season) =	NA deg C	30Q10 (Annual) =	0 MGD	- 30Q10 Mix =	0 %	90% Temp (Wet season) =	NA deg C
90% Maximum pH =	8.1 SU	1Q10 (Wet season) =	0 MGD	Wet Season - 1Q10 Mix =	0 %	90% Maximum pH =	8.1 SU
10% Maximum pH =	7.1 SU	30Q10 (Wet season) =	0 MGD	- 30Q10 Mix =	0 %	10% Maximum pH =	7.1 SU
Tier Designation (1 or 2) =	1	30Q5 =	0 MGD			Discharge Flow =	0.06 MGD
Public Water Supply (PWS) Y/N? =	N	Harmonic Mean =	0 MGD				
Trout Present Y/N? =	N						
Early Life Stages Present Y/N? =	Y						

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenaphthene	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	--	--	--	--	--	--	--	--	na	9.3E+00
Acrylonitrile <sup>C</sup>	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	--	--	--	--	--	--	--	--	na	2.5E+00
Aldrin <sup>C</sup>	0	3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	--	--	--	--	--	--	--	--	3.0E+00	--	na	5.0E-04
Ammonia-N (mg/l) (Yearly)	0	6.95E+00	1.16E+00	na	--	6.95E+00	1.16E+00	na	--	--	--	--	--	--	--	--	--	6.95E+00	1.16E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	6.95E+00	#VALUE!	na	--	6.95E+00	#VALUE!	na	--	--	--	--	--	--	--	--	--	6.95E+00	#VALUE!	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	--	--	na	4.0E+04
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	--	--	na	6.4E+02
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene <sup>C</sup>	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	--	--	na	5.1E+02
Benzidine <sup>C</sup>	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	--	--	--	--	--	--	--	--	na	2.0E-03
Benzo (a) anthracene <sup>C</sup>	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (b) fluoranthene <sup>C</sup>	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (k) fluoranthene <sup>C</sup>	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (a) pyrene <sup>C</sup>	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Bis(2-Chloroethyl) Ether <sup>C</sup>	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	--	--	na	5.3E+00
Bis(2-Chloroisopropyl) Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	--	--	na	6.5E+04
Bis 2-Ethylhexyl Phthalate <sup>C</sup>	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	--	--	--	--	--	--	--	--	na	2.2E+01
Bromoform <sup>C</sup>	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E+03
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
Cadmium	0	1.4E+00	5.6E-01	na	--	1.4E+00	5.6E-01	na	--	--	--	--	--	--	--	--	--	1.4E+00	5.6E-01	na	--
Carbon Tetrachloride <sup>C</sup>	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	--	--	na	1.6E+01
Chlordane <sup>C</sup>	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	8.1E-03
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane <sup>C</sup>	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	--	--	na	1.3E+02
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	2.7E+02	3.5E+01	na	--	2.7E+02	3.5E+01	na	--	--	--	--	--	--	--	--	--	2.7E+02	3.5E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene <sup>C</sup>	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	--	--	na	1.8E-02
Copper	0	5.7E+00	4.1E+00	na	--	5.7E+00	4.1E+00	na	--	--	--	--	--	--	--	--	--	5.7E+00	4.1E+00	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	1.6E+04
DDD <sup>C</sup>	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	--	--	na	3.1E-03
DDE <sup>C</sup>	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	--	--	na	2.2E-03
DDT <sup>C</sup>	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	2.2E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	--	--	--	--	--	--	--	--	1.7E-01	1.7E-01	na	--
Dibenz(a,h)anthracene <sup>C</sup>	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	--	--	na	9.6E+02
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	--	--	na	1.9E+02
3,3-Dichlorobenzidine <sup>C</sup>	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	--	--	na	2.8E-01
Dichlorobromomethane <sup>C</sup>	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	--	--	na	1.7E+02
1,2-Dichloroethane <sup>C</sup>	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	--	--	na	7.1E+03
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	--	--	na	1.0E+04
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	--	--	na	2.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane <sup>C</sup>	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
1,3-Dichloropropene <sup>C</sup>	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	--	--	na	2.1E+02
Dieldrin <sup>C</sup>	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	5.4E-04
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	--	--	na	4.4E+04
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	--	--	na	8.5E+02
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	--	--	na	1.1E+06
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	--	--	na	4.5E+03
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	na	2.8E+02
2,4-Dinitrotoluene <sup>C</sup>	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	--	--	na	3.4E+01
Dioxin 2,3,7,8- tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	--	--	na	5.1E-08
1,2-Diphenylhydrazine <sup>C</sup>	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	--	--	na	2.0E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	6.0E-02
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	--	--	na	3.0E-01

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	--	--	na	2.1E+03
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	--	--	na	1.4E+02
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor <sup>C</sup>	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	7.9E-04
Heptachlor Epoxide <sup>C</sup>	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	3.9E-04
Hexachlorobenzene <sup>C</sup>	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	--	--	na	2.9E-03
Hexachlorobutadiene <sup>C</sup>	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E+02
Hexachlorocyclohexane																					
Alpha-BHC <sup>C</sup>	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	--	--	na	4.9E-02
Hexachlorocyclohexane																					
Beta-BHC <sup>C</sup>	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	--	--	na	1.7E-01
Hexachlorocyclohexane																					
Gamma-BHC <sup>C</sup> (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	--	--	--	--	9.5E-01	--	na	1.8E+00
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	--	--	na	1.1E+03
Hexachloroethane <sup>C</sup>	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene <sup>C</sup>	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone <sup>C</sup>	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	--	--	na	9.6E+03
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	3.8E+01	4.3E+00	na	--	3.8E+01	4.3E+00	na	--	--	--	--	--	--	--	--	--	3.8E+01	4.3E+00	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E+03
Methylene Chloride <sup>C</sup>	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	--	--	na	5.9E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	8.5E+01	9.5E+00	na	4.6E+03	8.5E+01	9.5E+00	na	4.6E+03	--	--	--	--	--	--	--	--	8.5E+01	9.5E+00	na	4.6E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	--	--	na	6.9E+02
N-Nitrosodimethylamine <sup>C</sup>	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	--	--	na	3.0E+01
N-Nitrosodiphenylamine <sup>C</sup>	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	6.0E+01
N-Nitrosodi-n-propylamine <sup>C</sup>	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	--	--	na	5.1E+00
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	2.8E+01	6.6E+00	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB Total <sup>C</sup>	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	--	--	--	--	1.4E-02	na	6.4E-04
Pentachlorophenol <sup>C</sup>	0	9.6E+00	7.4E+00	na	3.0E+01	9.6E+00	7.4E+00	na	3.0E+01	--	--	--	--	--	--	--	--	9.6E+00	7.4E+00	na	3.0E+01
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	--	--	--	--	na	8.6E+05
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	--	--	--	--	2.0E+01	5.0E+00	na	4.2E+03
Silver	0	7.3E-01	--	na	--	7.3E-01	--	na	--	--	--	--	--	--	--	--	--	7.3E-01	--	na	--
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,1,2,2-Tetrachloroethane <sup>C</sup>	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	--	--	na	4.0E+01
Tetrachloroethylene <sup>C</sup>	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	--	--	--	--	na	4.7E-01
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	--	--	--	--	na	6.0E+03
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Toxaphene <sup>C</sup>	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	--	--	--	--	7.3E-01	2.0E-04	na	2.8E-03
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	--	--	--	--	4.6E-01	7.2E-02	na	--
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	--	--	--	--	na	7.0E+01
1,1,2-Trichloroethane <sup>C</sup>	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	na	1.6E+02
Trichloroethylene <sup>C</sup>	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	--	--	na	3.0E+02
2,4,6-Trichlorophenol <sup>C</sup>	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	--	--	na	2.4E+01
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Vinyl Chloride <sup>C</sup>	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	--	--	na	2.4E+01
Zinc	0	5.5E+01	5.5E+01	na	2.6E+04	5.5E+01	5.5E+01	na	2.6E+04	--	--	--	--	--	--	--	--	5.5E+01	5.5E+01	na	2.6E+04

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.  
Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic  
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)	Note: do not use QL's lower than the minimum QL's provided in agency guidance
Antimony	6.4E+02	
Arsenic	9.0E+01	
Barium	na	
Cadmium	3.4E-01	
Chromium III	2.1E+01	
Chromium VI	6.4E+00	
Copper	2.3E+00	
Iron	na	
Lead	2.6E+00	
Manganese	na	
Mercury	4.6E-01	
Nickel	5.7E+00	
Selenium	3.0E+00	
Silver	2.9E-01	
Zinc	2.2E+01	

# FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: **Town of Surry WWTP**

Permit No.: **VA0061646**

Receiving Stream: **Dark Swamp UT**

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	40.6 mg/L	1Q10 (Annual) =	0 MGD	Annual - 1Q10 Mix =	0 %	Mean Hardness (as CaCO3) =	40.6 mg/L
90% Temperature (Annual) =	23.7 deg C	7Q10 (Annual) =	0 MGD	- 7Q10 Mix =	0 %	90% Temp (Annual) =	23.7 deg C
90% Temperature (Wet season) =	NA deg C	30Q10 (Annual) =	0 MGD	- 30Q10 Mix =	0 %	90% Temp (Wet season) =	NA deg C
90% Maximum pH =	8.1 SU	1Q10 (Wet season) =	0 MGD	Wet Season - 1Q10 Mix =	0 %	90% Maximum pH =	8.1 SU
10% Maximum pH =	7.1 SU	30Q10 (Wet season) =	0 MGD	- 30Q10 Mix =	0 %	10% Maximum pH =	7.1 SU
Tier Designation (1 or 2) =	1	30Q5 =	0 MGD			Discharge Flow =	0.099 MGD
Public Water Supply (PWS) Y/N? =	N	Harmonic Mean =	0 MGD				
Trout Present Y/N? =	N						
Early Life Stages Present Y/N? =	Y						

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenaphthene	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	--	--	--	--	--	--	--	--	na	9.3E+00
Acrylonitrile <sup>C</sup>	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	--	--	--	--	--	--	--	--	na	2.5E+00
Aldrin <sup>C</sup>	0	3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	--	--	--	--	--	--	--	--	3.0E+00	--	na	5.0E-04
Ammonia-N (mg/l) (Yearly)	0	6.95E+00	1.16E+00	na	--	6.95E+00	1.16E+00	na	--	--	--	--	--	--	--	--	--	6.95E+00	1.16E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	6.95E+00	#VALUE!	na	--	6.95E+00	#VALUE!	na	--	--	--	--	--	--	--	--	--	6.95E+00	#VALUE!	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	--	--	na	4.0E+04
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	--	--	na	6.4E+02
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene <sup>C</sup>	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	--	--	na	5.1E+02
Benzidine <sup>C</sup>	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	--	--	--	--	--	--	--	--	na	2.0E-03
Benzo (a) anthracene <sup>C</sup>	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (b) fluoranthene <sup>C</sup>	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (k) fluoranthene <sup>C</sup>	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (a) pyrene <sup>C</sup>	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Bis(2-Chloroethyl) Ether <sup>C</sup>	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	--	--	na	5.3E+00
Bis(2-Chloroisopropyl) Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	--	--	na	6.5E+04
Bis 2-Ethylhexyl Phthalate <sup>C</sup>	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	--	--	--	--	--	--	--	--	na	2.2E+01
Bromoform <sup>C</sup>	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E+03
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
Cadmium	0	1.4E+00	5.6E-01	na	--	1.4E+00	5.6E-01	na	--	--	--	--	--	--	--	--	--	1.4E+00	5.6E-01	na	--
Carbon Tetrachloride <sup>C</sup>	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	--	--	na	1.6E+01
Chlordane <sup>C</sup>	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	8.1E-03
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane <sup>C</sup>	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	--	--	na	1.3E+02
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	2.7E+02	3.5E+01	na	--	2.7E+02	3.5E+01	na	--	--	--	--	--	--	--	--	--	2.7E+02	3.5E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene <sup>C</sup>	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	--	--	na	1.8E-02
Copper	0	5.7E+00	4.1E+00	na	--	5.7E+00	4.1E+00	na	--	--	--	--	--	--	--	--	--	5.7E+00	4.1E+00	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	1.6E+04
DDD <sup>C</sup>	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	--	--	na	3.1E-03
DDE <sup>C</sup>	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	--	--	na	2.2E-03
DDT <sup>C</sup>	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	2.2E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	--	--	--	--	--	--	--	--	1.7E-01	1.7E-01	na	--
Dibenz(a,h)anthracene <sup>C</sup>	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	--	--	na	9.6E+02
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	--	--	na	1.9E+02
3,3-Dichlorobenzidine <sup>C</sup>	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	--	--	na	2.8E-01
Dichlorobromomethane <sup>C</sup>	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	--	--	na	1.7E+02
1,2-Dichloroethane <sup>C</sup>	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	--	--	na	7.1E+03
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	--	--	na	1.0E+04
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	--	--	na	2.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane <sup>C</sup>	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
1,3-Dichloropropene <sup>C</sup>	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	--	--	na	2.1E+02
Dieldrin <sup>C</sup>	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	5.4E-04
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	--	--	na	4.4E+04
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	--	--	na	8.5E+02
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	--	--	na	1.1E+06
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	--	--	na	4.5E+03
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	na	2.8E+02
2,4-Dinitrotoluene <sup>C</sup>	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	--	--	na	3.4E+01
Dioxin 2,3,7,8- tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	--	--	na	5.1E-08
1,2-Diphenylhydrazine <sup>C</sup>	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	--	--	na	2.0E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	6.0E-02
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	--	--	na	3.0E-01



Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	--	--	na	2.1E+03
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	--	--	na	1.4E+02
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor <sup>C</sup>	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	7.9E-04
Heptachlor Epoxide <sup>C</sup>	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	3.9E-04
Hexachlorobenzene <sup>C</sup>	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	--	--	na	2.9E-03
Hexachlorobutadiene <sup>C</sup>	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E+02
Hexachlorocyclohexane																					
Alpha-BHC <sup>C</sup>	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	--	--	na	4.9E-02
Hexachlorocyclohexane																					
Beta-BHC <sup>C</sup>	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	--	--	na	1.7E-01
Hexachlorocyclohexane																					
Gamma-BHC <sup>C</sup> (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	--	--	--	--	9.5E-01	--	na	1.8E+00
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	--	--	na	1.1E+03
Hexachloroethane <sup>C</sup>	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene <sup>C</sup>	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone <sup>C</sup>	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	--	--	na	9.6E+03
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	3.8E+01	4.3E+00	na	--	3.8E+01	4.3E+00	na	--	--	--	--	--	--	--	--	--	3.8E+01	4.3E+00	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E+03
Methylene Chloride <sup>C</sup>	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	--	--	na	5.9E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	8.5E+01	9.5E+00	na	4.6E+03	8.5E+01	9.5E+00	na	4.6E+03	--	--	--	--	--	--	--	--	8.5E+01	9.5E+00	na	4.6E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	--	--	na	6.9E+02
N-Nitrosodimethylamine <sup>C</sup>	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	--	--	na	3.0E+01
N-Nitrosodiphenylamine <sup>C</sup>	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	6.0E+01
N-Nitrosodi-n-propylamine <sup>C</sup>	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	--	--	na	5.1E+00
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	2.8E+01	6.6E+00	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB Total <sup>C</sup>	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	--	--	--	--	1.4E-02	na	6.4E-04
Pentachlorophenol <sup>C</sup>	0	9.6E+00	7.4E+00	na	3.0E+01	9.6E+00	7.4E+00	na	3.0E+01	--	--	--	--	--	--	--	--	9.6E+00	7.4E+00	na	3.0E+01
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	--	--	--	--	na	8.6E+05
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	--	--	--	--	2.0E+01	5.0E+00	na	4.2E+03
Silver	0	7.3E-01	--	na	--	7.3E-01	--	na	--	--	--	--	--	--	--	--	--	7.3E-01	--	na	--
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,1,2,2-Tetrachloroethane <sup>C</sup>	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	--	--	na	4.0E+01
Tetrachloroethylene <sup>C</sup>	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	--	--	--	--	na	4.7E-01
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	--	--	--	--	na	6.0E+03
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Toxaphene <sup>C</sup>	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	--	--	--	--	7.3E-01	2.0E-04	na	2.8E-03
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	--	--	--	--	4.6E-01	7.2E-02	na	--
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	--	--	--	--	na	7.0E+01
1,1,2-Trichloroethane <sup>C</sup>	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	na	1.6E+02
Trichloroethylene <sup>C</sup>	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	--	--	na	3.0E+02
2,4,6-Trichlorophenol <sup>C</sup>	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	--	--	na	2.4E+01
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Vinyl Chloride <sup>C</sup>	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	--	--	na	2.4E+01
Zinc	0	5.5E+01	5.5E+01	na	2.6E+04	5.5E+01	5.5E+01	na	2.6E+04	--	--	--	--	--	--	--	--	5.5E+01	5.5E+01	na	2.6E+04

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.  
Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic  
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)	Note: do not use QL's lower than the minimum QL's provided in agency guidance
Antimony	6.4E+02	
Arsenic	9.0E+01	
Barium	na	
Cadmium	3.4E-01	
Chromium III	2.1E+01	
Chromium VI	6.4E+00	
Copper	2.3E+00	
Iron	na	
Lead	2.6E+00	
Manganese	na	
Mercury	4.6E-01	
Nickel	5.7E+00	
Selenium	3.0E+00	
Silver	2.9E-01	
Zinc	2.2E+01	

## 2016 STATS.exe Evaluation:

```
Facility = Town of Surry WWTP (0.06 MGD)
  Chemical = Ammonia (mg/L)
  Chronic averaging period = 30
  WLAa = 6.95
  WLAc = 1.16
  Q.L. = 0.20
  # samples/mo. = 1
  # samples/wk. = 1
  Summary of Statistics:
  # observations = 1
  Expected Value = 9
  Variance = 29.16
  C.V. = 0.6
  97th percentile daily values = 21.9007
  97th percentile 4 day average = 14.9741
  97th percentile 30 day average = 10.8544
  # < Q.L. = 0
  Model used = BPJ Assumptions, type 2 data
  A limit is needed based on Chronic Toxicity
  Maximum Daily Limit = 2.34049730836292
Average Weekly Limit = 2.34049730836292
Average Monthly Limit = 2.34049730836292
  The data are:
  9
```

```
Facility = Town of Surry WWTP (0.099 MGD)
  Chemical = Ammonia (mg/L)
  Chronic averaging period = 30
  WLAa = 6.95
  WLAc = 1.16
  Q.L. = 0.20
  # samples/mo. = 1
  # samples/wk. = 1
  Summary of Statistics:
  # observations = 1
  Expected Value = 9
  Variance = 29.16
  C.V. = 0.6
  97th percentile daily values = 21.9007
  97th percentile 4 day average = 14.9741
  97th percentile 30 day average = 10.8544
  # < Q.L. = 0
  Model used = BPJ Assumptions, type 2 data
  A limit is needed based on Chronic Toxicity
  Maximum Daily Limit = 2.34049730836292
Average Weekly Limit = 2.34049730836292
Average Monthly Limit = 2.34049730836292
  The data are:
  9
```

```
Facility = Town of Surry WWTP (0.06 MGD)
  Chemical = total residual chlorine (ug/L)
  Chronic averaging period = 4
  WLAa = 19
  WLAc = 11
  Q.L. = 100
  # samples/mo. = 90
  # samples/wk. = 21
  Summary of Statistics:
  # observations = 1
  Expected Value = 20000
  Variance = 1440000
  C.V. = 0.6
  97th percentile daily values = 48668.3
  97th percentile 4 day average = 33275.8
  97th percentile 30 day average= 24121.0
  # < Q.L. = 0
  Model used = BPJ Assumptions, type 2 data
  A limit is needed based on Chronic Toxicity
  Maximum Daily Limit = 16.0883226245855
Average Weekly Limit = 8.37736286379464
Average Monthly Limit = 7.39793639872119
  The data are:
  20000
```

```
Facility = Town of Surry WWTP (0.099 MGD)
  Chemical = total residual chlorine (ug/L)
  Chronic averaging period = 4
  WLAa = 19
  WLAc = 11
  Q.L. = 100
  # samples/mo. = 90
  # samples/wk. = 21
  Summary of Statistics:
  # observations = 1
  Expected Value = 20000
  Variance = 1440000
  C.V. = 0.6
  97th percentile daily values = 48668.3
  97th percentile 4 day average = 33275.8
  97th percentile 30 day average= 24121.0
  # < Q.L. = 0
  Model used = BPJ Assumptions, type 2 data
  A limit is needed based on Chronic Toxicity
  Maximum Daily Limit = 16.0883226245855
Average Weekly Limit = 8.37736286379464
Average Monthly Limit = 7.39793639872119
  The data are:
  20000
```

Facility = Town of Surry WWTP (0.06 MGD)  
Chemical = copper, dissolved (ug/L)  
Chronic averaging period = 4  
WLAa = 5.7  
WLAc = 4.1  
Q.L. = 0.5  
# samples/mo. = 1  
# samples/wk. = 1  
Summary of Statistics:  
# observations = 1  
Expected Value = 1.92  
Variance = 1.32710  
C.V. = 0.6  
97th percentile daily values = 4.67216  
97th percentile 4 day average = 3.19447  
97th percentile 30 day average = 2.31562  
# < Q.L. = 0  
Model used = BPJ Assumptions, type 2 data  
**No Limit is required for this material**  
The data are:  
1.92

Facility = Town of Surry WWTP (0.099 MGD)  
Chemical = copper, dissolved (ug/L)  
Chronic averaging period = 4  
WLAa = 5.7  
WLAc = 4.1  
Q.L. = 0.5  
# samples/mo. = 1  
# samples/wk. = 1  
Summary of Statistics:  
# observations = 1  
Expected Value = 1.92  
Variance = 1.32710  
C.V. = 0.6  
97th percentile daily values = 4.67216  
97th percentile 4 day average = 3.19447  
97th percentile 30 day average = 2.31562  
# < Q.L. = 0  
Model used = BPJ Assumptions, type 2 data  
**No Limit is required for this material**  
The data are:  
1.92

```
Facility = Town of Surry WWTP (0.06 MGD)
  Chemical = nickel, dissolved (ug/L)
  Chronic averaging period = 4
  WLAa = 85
  WLAc = 9.5
  Q.L. = 0.94
  # samples/mo. = 1
  # samples/wk. = 1
  Summary of Statistics:
  # observations = 1
  Expected Value = 1.27
  Variance = .580644
  C.V. = 0.6
  97th percentile daily values = 3.09044
  97th percentile 4 day average = 2.11301
  97th percentile 30 day average = 1.53168
  # < Q.L. = 0
  Model used = BPJ Assumptions, type 2 data
No Limit is required for this material
  The data are:
  1.27
```

```
Facility = Town of Surry WWTP (0.099 MGD)
  Chemical = nickel, dissolved (ug/L)
  Chronic averaging period = 4
  WLAa = 85
  WLAc = 9.5
  Q.L. = 0.94
  # samples/mo. = 1
  # samples/wk. = 1
  Summary of Statistics:
  # observations = 1
  Expected Value = 1.27
  Variance = .580644
  C.V. = 0.6
  97th percentile daily values = 3.09044
  97th percentile 4 day average = 2.11301
  97th percentile 30 day average = 1.53168
  # < Q.L. = 0
  Model used = BPJ Assumptions, type 2 data
No Limit is required for this material
  The data are:
  1.27
```

```
Facility = Town of Surry WWTP (0.06 MGD)
  Chemical = zinc, dissolved (ug/L)
  Chronic averaging period = 4
  WLAa = 55
  WLAc = 55
  Q.L. = 3.6
  # samples/mo. = 1
  # samples/wk. = 1
  Summary of Statistics:
  # observations = 1
  Expected Value = 12.4
  Variance = 55.3536
  C.V. = 0.6
  97th percentile daily values = 30.1743
  97th percentile 4 day average = 20.6309
  97th percentile 30 day average = 14.9550
  # < Q.L. = 0
  Model used = BPJ Assumptions, type 2 data
No Limit is required for this material
  The data are:
  12.4
```

```
Facility = Town of Surry WWTP (0.099 MGD)
  Chemical = zinc, dissolved (ug/L)
  Chronic averaging period = 4
  WLAa = 55
  WLAc = 55
  Q.L. = 3.6
  # samples/mo. = 1
  # samples/wk. = 1
  Summary of Statistics:
  # observations = 1
  Expected Value = 12.4
  Variance = 55.3536
  C.V. = 0.6
  97th percentile daily values = 30.1743
  97th percentile 4 day average = 20.6309
  97th percentile 30 day average = 14.9550
  # < Q.L. = 0
  Model used = BPJ Assumptions, type 2 data
No Limit is required for this material
  The data are:
  12.4
```



# FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Town of Surry STP

Permit No.: VA0061646

Receiving Stream: UT Dark Swamp

Version: OWP Guidance Memo 00-2011 (8/24/00)

## Stream Information

Mean Hardness (as CaCO<sub>3</sub>) = 26 mg/L  
 90% Temperature (Annual) = 23 deg C  
 90% Temperature (Wet season) = deg C  
 90% Maximum pH = 8.23 SU  
 10% Maximum pH = 7.49 SU  
 Tier Designation (1 or 2) = 1  
 Public Water Supply (PWS) Y/N? = n  
 Trout Present Y/N? = n  
 Early Life Stages Present Y/N? = y

## Stream Flows

1Q10 (Annual) = 0 MGD  
 7Q10 (Annual) = 0 MGD  
 30Q10 (Annual) = 0 MGD  
 1Q10 (Wet season) = MGD  
 30Q10 (Wet season) = MGD  
 30Q5 = 0 MGD  
 Harmonic Mean = 0 MGD  
 Annual Average = 0 MGD

## Mixing Information

Annual - 1Q10 Mix = 100 %  
 - 7Q10 Mix = 100 %  
 - 30Q10 Mix = 100 %  
 Wet Season - 1Q10 Mix = %  
 - 30Q10 Mix = %

## Effluent Information

Mean Hardness (as CaCO<sub>3</sub>) = 26 mg/L  
 90% Temp (Annual) = 23 deg C  
 90% Temp (Wet season) = deg C  
 90% Maximum pH = 8.23 SU  
 10% Maximum pH = 7.49 SU  
 Discharge Flow = 0.06 MGD

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Acenaphthene	0	--	--	na	2.7E+03	--	--	--	--	--	--	--	--	--	--	na
Acrolein	0	--	--	na	7.8E+02	--	--	--	--	--	--	--	--	--	--	na
Acrylonitrile <sup>c</sup>	0	--	--	na	6.6E+00	--	--	--	--	--	--	--	--	--	--	na
Aldrin <sup>c</sup>	0	3.0E+00	--	na	1.4E-03	3.0E+00	--	--	--	--	--	--	--	3.0E+00	--	na
Ammonia-N (mg/l) (Yearly)	0	5.40E+00	9.89E-01	na	--	5.4E+00	9.9E-01	--	--	--	--	--	--	5.4E+00	9.9E-01	na
Ammonia-N (mg/l) (High Flow)	0	5.40E+00	1.71E+00	na	--	5.4E+00	1.7E+00	--	--	--	--	--	--	5.4E+00	1.7E+00	na
Anthracene	0	--	--	na	1.1E+05	--	--	--	--	--	--	--	--	--	--	na
Antimony	0	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	--	--	--	--	--	--	3.4E+02	1.5E+02	na
Barium	0	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na
Benzene <sup>c</sup>	0	--	--	na	7.1E+02	--	--	--	--	--	--	--	--	--	--	na
Benzidine <sup>c</sup>	0	--	--	na	5.4E-03	--	--	--	--	--	--	--	--	--	--	na
Benzo (a) anthracene <sup>c</sup>	0	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na
Benzo (b) fluoranthene <sup>c</sup>	0	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na
Benzo (k) fluoranthene <sup>c</sup>	0	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na
Benzo (a) pyrene <sup>c</sup>	0	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na
Bis(2-Chloroethyl) Ether	0	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	--	--	na
Bis(2-Chloroisopropyl) Ether	0	--	--	na	1.7E+05	--	--	--	--	--	--	--	--	--	--	na
Bromolom <sup>c</sup>	0	--	--	na	3.6E+03	--	--	--	--	--	--	--	--	--	--	na
Butylbenzylphthalate	0	--	--	na	5.2E+03	--	--	--	--	--	--	--	--	--	--	na
Cadmium	0	8.6E-01	3.9E-01	na	--	8.6E-01	3.9E-01	--	--	--	--	--	--	8.6E-01	3.9E-01	na
Carbon Tetrachloride <sup>c</sup>	0	--	--	na	4.4E+01	--	--	--	--	--	--	--	--	--	--	na
Chlordane <sup>c</sup>	0	2.4E+00	4.3E-03	na	2.2E-02	2.4E+00	4.3E-03	--	--	--	--	--	--	2.4E+00	4.3E-03	na
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	--	--	--	--	--	--	8.6E+05	2.3E+05	na
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	--	--	--	--	--	--	1.9E+01	1.1E+01	na
Chlorobenzene	0	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorobromomethane <sup>c</sup>	0	--	--	na	3.4E+02	--	--	na	3.4E+02	--	--	--	--	--	--	--	--	--	--	na	3.4E+02
Chloroform <sup>c</sup>	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na	2.9E+04
2-Chloronaphthalene	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na	4.3E+03
2-Chlorophenol	0	--	--	na	4.0E+02	--	--	na	4.0E+02	--	--	--	--	--	--	--	--	--	--	na	4.0E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	1.9E+02	2.5E+01	na	--	1.9E+02	2.5E+01	na	--	--	--	--	--	--	--	--	--	1.9E+02	2.5E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene <sup>c</sup>	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Copper	0	3.8E+00	2.8E+00	na	--	3.8E+00	2.8E+00	na	--	--	--	--	--	--	--	--	--	3.8E+00	2.8E+00	na	--
Cyanide	0	2.2E+01	5.2E+00	na	2.2E+05	2.2E+01	5.2E+00	na	2.2E+05	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	2.2E+05
DDD <sup>c</sup>	0	--	--	na	8.4E-03	--	--	na	8.4E-03	--	--	--	--	--	--	--	--	--	--	na	8.4E-03
DDE <sup>c</sup>	0	--	--	na	5.9E-03	--	--	na	5.9E-03	--	--	--	--	--	--	--	--	--	--	na	5.9E-03
DDT <sup>c</sup>	0	1.1E+00	1.0E-03	na	5.9E-03	1.1E+00	1.0E-03	na	5.9E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	5.9E-03
Demeton	0	--	1.0E-01	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Dibenz(a,h)anthracene <sup>c</sup>	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Diethyl Phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
Dichloromethane	0	--	--	na	1.6E+04	--	--	na	1.6E+04	--	--	--	--	--	--	--	--	--	--	na	1.6E+04
(Methylene Chloride) <sup>c</sup>	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
1,2-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	2.6E+03
1,3-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	2.6E+03
1,4-Dichlorobenzene	0	--	--	na	7.7E-01	--	--	na	7.7E-01	--	--	--	--	--	--	--	--	--	--	na	7.7E-01
3,3-Dichlorobenzidine <sup>c</sup>	0	--	--	na	4.6E+02	--	--	na	4.6E+02	--	--	--	--	--	--	--	--	--	--	na	4.6E+02
Dichlorobromomethane <sup>c</sup>	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
1,2-Dichloroethane <sup>c</sup>	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
1,1-Dichloroethylene	0	--	--	na	1.4E+05	--	--	na	1.4E+05	--	--	--	--	--	--	--	--	--	--	na	1.4E+05
1,2-trans-dichloroethylene	0	--	--	na	7.9E+02	--	--	na	7.9E+02	--	--	--	--	--	--	--	--	--	--	na	7.9E+02
2,4-Dichlorophenol	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
2,4-Dichlorophenoxy	0	--	--	na	3.9E+02	--	--	na	3.9E+02	--	--	--	--	--	--	--	--	--	--	na	3.9E+02
acetic acid (2,4-D)	0	--	--	na	1.7E+03	--	--	na	1.7E+03	--	--	--	--	--	--	--	--	--	--	na	1.7E+03
1,2-Dichloropropane <sup>c</sup>	0	--	--	na	5.6E-02	2.4E-01	5.6E-02	na	1.4E-03	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	1.4E-03
1,3-Dichloropropene	0	--	--	na	1.2E+05	--	--	na	1.2E+05	--	--	--	--	--	--	--	--	--	--	na	1.2E+05
Dieldrin <sup>c</sup>	0	2.4E-01	5.6E-02	na	1.4E-03	2.4E-01	5.6E-02	na	1.4E-03	--	--	--	--	--	--	--	--	--	--	na	1.4E-03
Diethyl Phthalate	0	--	--	na	5.9E+01	--	--	na	5.9E+01	--	--	--	--	--	--	--	--	--	--	na	5.9E+01
Di-2-Ethylhexyl Phthalate <sup>c</sup>	0	--	--	na	2.3E+03	--	--	na	2.3E+03	--	--	--	--	--	--	--	--	--	--	na	2.3E+03
2,4-Dimethylphenol	0	--	--	na	2.9E+06	--	--	na	2.9E+06	--	--	--	--	--	--	--	--	--	--	na	2.9E+06
Dimethyl Phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
D-n-Butyl Phthalate	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
2,4-Dinitrophenol	0	--	--	na	7.65E+02	--	--	na	7.65E+02	--	--	--	--	--	--	--	--	--	--	na	7.65E+02
2-Methyl-4,6-Dinitrophenol	0	--	--	na	9.1E+01	--	--	na	9.1E+01	--	--	--	--	--	--	--	--	--	--	na	9.1E+01
2,4-Dinitrotoluene <sup>c</sup>	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin)	0	--	--	na	1.2E-06	--	--	na	1.2E-06	--	--	--	--	--	--	--	--	--	--	na	1.2E-06
(ppq)	0	--	--	na	5.4E+00	--	--	na	5.4E+00	--	--	--	--	--	--	--	--	--	--	na	5.4E+00
1,2-Diphenylhydrazine <sup>c</sup>	0	--	--	na	5.6E-02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	2.4E+02
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	2.4E+02
Beta-Endosulfan	0	--	--	na	2.4E+02	--	--	na	2.4E+02	--	--	--	--	--	--	--	--	--	--	na	2.4E+02
Endosulfan Sulfate	0	--	--	na	8.1E-01	--	--	na	8.1E-01	--	--	--	--	--	--	--	--	--	--	na	8.1E-01
Endrin	0	8.6E-02	3.6E-02	na	8.1E-01	8.6E-02	3.6E-02	na	8.1E-01	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	8.1E-01
Endrin Aldehyde	0	--	--	na	8.1E-01	--	--	na	8.1E-01	--	--	--	--	--	--	--	--	--	--	na	8.1E-01

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na	2.9E+04
Fluoranthene	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
Fluorene	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor <sup>c</sup>	0	5.2E-01	3.8E-03	na	2.1E-03	5.2E-01	3.8E-03	na	2.1E-03	5.2E-01	3.8E-03	na	2.1E-03	5.2E-01	3.8E-03	na	2.1E-03	5.2E-01	3.8E-03	na	2.1E-03
Heptachlor Epoxide <sup>c</sup>	0	5.2E-01	3.8E-03	na	1.1E-03	5.2E-01	3.8E-03	na	1.1E-03	5.2E-01	3.8E-03	na	1.1E-03	5.2E-01	3.8E-03	na	1.1E-03	5.2E-01	3.8E-03	na	1.1E-03
Hexachlorobenzene <sup>c</sup>	0	--	--	na	7.7E-03	--	--	na	7.7E-03	--	--	--	--	--	--	--	--	--	--	na	7.7E-03
Hexachlorobutadiene <sup>c</sup>	0	--	--	na	5.0E+02	--	--	na	5.0E+02	--	--	--	--	--	--	--	--	--	--	na	5.0E+02
Hexachlorocyclohexane	0	--	--	na	1.3E-01	--	--	na	1.3E-01	--	--	--	--	--	--	--	--	--	--	na	1.3E-01
Alpha-BHC <sup>c</sup>	0	--	--	na	4.6E-01	--	--	na	4.6E-01	--	--	--	--	--	--	--	--	--	--	na	4.6E-01
Beta-BHC <sup>c</sup>	0	--	--	na	6.3E-01	--	--	na	6.3E-01	--	--	--	--	--	--	--	--	--	--	na	6.3E-01
Hexachlorocyclohexane	0	9.5E-01	na	na	1.7E+04	9.5E-01	--	na	1.7E+04	--	--	--	--	--	--	--	--	9.5E-01	--	na	1.7E+04
Gamma-BHC <sup>c</sup> (Lindane)	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Hexachlorocyclopentadiene	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Hexachloroethane <sup>c</sup>	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	2.0E+00	na	--	--	2.0E+00	na	--	--	2.0E+00	na	--
Hydrogen Sulfide	0	--	--	na	2.8E+04	--	--	na	2.8E+04	--	--	--	--	--	--	--	--	--	--	na	2.8E+04
Indeno (1,2,3-cd) pyrene <sup>c</sup>	0	--	--	na	0.0E+00	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--
Iron	0	2.1E+01	2.4E+00	na	--	2.1E+01	2.4E+00	na	--	2.1E+01	2.4E+00	na	--	2.1E+01	2.4E+00	na	--	2.1E+01	2.4E+00	na	--
Isophorone <sup>c</sup>	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	1.0E-01	na	--	--	1.0E-01	na	--	--	1.0E-01	na	--
Kepon <sup>c</sup>	0	--	--	na	5.1E-02	--	--	na	5.1E-02	1.4E+00	7.7E-01	na	5.1E-02	1.4E+00	7.7E-01	na	5.1E-02	1.4E+00	7.7E-01	na	5.1E-02
Lead	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Malathion	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	3.0E-02	na	--	--	3.0E-02	na	--	--	3.0E-02	na	--
Manganese	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--
Mercury	0	5.8E+01	6.5E+00	na	2.1E+04	5.8E+01	6.5E+00	na	2.1E+04	5.8E+01	6.5E+00	na	2.1E+04	5.8E+01	6.5E+00	na	2.1E+04	5.8E+01	6.5E+00	na	2.1E+04
Methyl Bromide	0	--	--	na	4.8E+03	--	--	na	4.8E+03	--	--	--	--	--	--	--	--	--	--	na	4.8E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	3.0E-02	na	--	--	3.0E-02	na	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--
Monochlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04
Nickel	0	--	6.5E+01	na	4.8E+03	--	--	na	4.8E+03	--	--	--	--	--	--	--	--	--	--	na	4.8E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
N-Nitrosodimethylamine <sup>c</sup>	0	--	--	na	8.1E+01	--	--	na	8.1E+01	--	--	--	--	--	--	--	--	--	--	na	8.1E+01
N-Nitrosodiphenylamine <sup>c</sup>	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	na	1.6E+02
N-Nitrosodi-n-propylamine <sup>c</sup>	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	--	--	na	1.4E+01
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--
PCB-1016	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--
PCB-1221	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--
PCB-1232	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--
PCB-1242	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--
PCB-1248	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--
PCB-1254	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--
PCB-1260	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--
PCB Total <sup>c</sup>	0	--	--	na	1.7E-03	--	--	na	1.7E-03	--	--	--	--	--	--	--	--	--	--	na	1.7E-03

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Pentachlorophenol <sup>c</sup>	0	1.4E+01	1.1E+01	na	8.2E+01	1.4E+01	1.1E+01	na	8.2E+01	--	--	--	--	--	1.4E+01	1.1E+01	na	1.4E+01	1.1E+01	na	8.2E+01
Phenol	0	--	--	na	4.6E+06	--	--	na	4.6E+06	--	--	--	--	--	--	--	na	--	--	na	4.6E+06
Pyrene	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	na	--	--	na	1.1E+04
Radionuclides (pCi/l except Beta/Photon)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	na	--	--	na	--
Gross Alpha Activity	0	--	--	na	1.5E+01	--	--	na	1.5E+01	--	--	--	--	--	--	--	na	--	--	na	1.5E+01
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	na	--	--	na	4.0E+00
Strontium-90	0	--	--	na	8.0E+00	--	--	na	8.0E+00	--	--	--	--	--	--	--	na	--	--	na	8.0E+00
Tritium	0	--	--	na	2.0E+04	--	--	na	2.0E+04	--	--	--	--	--	--	--	na	--	--	na	2.0E+04
Selenium	0	2.0E+01	5.0E+00	na	1.1E+04	2.0E+01	5.0E+00	na	1.1E+04	--	--	--	--	--	--	--	na	2.0E+01	5.0E+00	na	1.1E+04
Silver	0	3.4E-01	--	na	--	3.4E-01	--	na	--	--	--	--	--	--	--	--	na	3.4E-01	--	na	--
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	na	--	--	na	--
1,1,2,2-Tetrachloroethane <sup>c</sup>	0	--	--	na	1.1E+02	--	--	na	1.1E+02	--	--	--	--	--	--	--	na	--	--	na	1.1E+02
Tetrachloroethylene <sup>c</sup>	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	na	--	--	na	8.9E+01
Thallium	0	--	--	na	6.3E+00	--	--	na	6.3E+00	--	--	--	--	--	--	--	na	--	--	na	6.3E+00
Toluene	0	--	--	na	2.0E+05	--	--	na	2.0E+05	--	--	--	--	--	--	--	na	--	--	na	2.0E+05
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	na	--	--	na	--
Toxaphene <sup>c</sup>	0	7.3E-01	2.0E-04	na	7.5E-03	7.3E-01	2.0E-04	na	7.5E-03	--	--	--	--	--	--	--	na	7.3E-01	2.0E-04	na	7.5E-03
Tributyltin	0	4.6E-01	6.3E-02	na	--	4.6E-01	6.3E-02	na	--	--	--	--	--	--	--	--	na	4.6E-01	6.3E-02	na	--
1,2,4-Trichlorobenzene	0	--	--	na	9.4E+02	--	--	na	9.4E+02	--	--	--	--	--	--	--	na	--	--	na	9.4E+02
1,1,2-Trichloroethane <sup>c</sup>	0	--	--	na	4.2E+02	--	--	na	4.2E+02	--	--	--	--	--	--	--	na	--	--	na	4.2E+02
Trichloroethylene <sup>c</sup>	0	--	--	na	8.1E+02	--	--	na	8.1E+02	--	--	--	--	--	--	--	na	--	--	na	8.1E+02
2,4,6-Trichlorophenol <sup>c</sup>	0	--	--	na	6.5E+01	--	--	na	6.5E+01	--	--	--	--	--	--	--	na	--	--	na	6.5E+01
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	na	--	--	na	--
Vinyl Chloride <sup>c</sup>	0	--	--	na	6.1E+01	--	--	na	6.1E+01	--	--	--	--	--	--	--	na	--	--	na	6.1E+01
Zinc	0	3.7E+01	3.8E+01	na	6.9E+04	3.7E+01	3.8E+01	na	6.9E+04	--	--	--	--	--	--	--	na	3.7E+01	3.8E+01	na	6.9E+04

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic  
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 3Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens. Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

changes from draft J: 1. Endrin Aldehyde criteria corrected

Metal	Target Value (SSTV)
Antimony	4.3E+03
Arsenic	9.0E+01
Barium	na
Cadmium	2.4E-01
Chromium III	1.5E+01
Chromium VI	6.4E+00
Copper	1.5E+00
Iron	na
Lead	1.5E+00
Manganese	na
Mercury	5.1E-02
Nickel	3.8E+00
Selenium	3.0E+00
Silver	1.4E-01
Zinc	1.5E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

### Copper (Dissolved)

Facility = Town of Surry  
Chemical = Copper  
Chronic averaging period = 4  
WLAa = 3.8  
WLAc = 2.8  
Q.L. = 1  
# samples/mo. = 1  
# samples/wk. = 1

Summary of Statistics:  
# observations = 24  
Expected Value = 4.69971  
Variance = 17.0121  
C.V. = 0.877625  
97th percentile daily values = 15.0475  
97th percentile 4 day average = 9.47620  
97th percentile 30 day average = 6.11618  
# < Q.L. = 2  
Model used = delta lognormal

A limit is needed based on Acute Toxicity  
Maximum Daily Limit = 3.8  
Average Weekly limit = 3.8  
Average Monthly Limit = 3.8

The data are:  
12, 33, 7  
7, 5, 4  
5, 7, 5  
5, 2, 2  
2, 2, 3  
2, 0, 3  
2, 3, 4  
2, 2, 0

Note: Values entered as <QL are represented as 0.  
Data were submitted with DMR data from 2001  
through 2003.

As indicated, the copper limitations are 3.8  $\mu\text{g/L}$ .  
The facility has been allowed a Schedule of  
Compliance to meet the more stringent copper  
limitations.

### Zinc (Dissolved)

Facility = Town of Surry  
Chemical = Zinc  
Chronic averaging period = 4  
WLAa = 37  
WLAc = 38  
Q.L. = 1  
# samples/mo. = 1  
# samples/wk. = 1

Summary of Statistics:  
# observations = 2  
Expected Value = 17  
Variance = 104.04  
C.V. = 0.6  
97th percentile daily values = 41.3680  
97th percentile 4 day average = 28.2844  
97th percentile 30 day average = 20.5029  
# < Q.L. = 0  
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity  
Maximum Daily Limit = 37  
Average Weekly limit = 37  
Average Monthly Limit = 37

The data are:  
19  
15

Note: These data were sampled on November 23, 1998  
and October 7, 1999, respectively, and submitted with  
the DMRs.

As indicated, the zinc limitations are 37  $\mu\text{g/L}$ . The facility  
has been allowed a Schedule of Compliance to meet the  
new zinc limitations.

**Attachment I**

**Loading Calculations**

### Loading Calculations for 0.060 MGD Facility (cBOD<sub>5</sub>, TSS & TKN)

Monthly Average	Weekly Average
cBOD <sub>5</sub> : (10 mg/L) X (3.785412 L/gal) X (1,000,000 gal/MG) X (g/1,000 mg) X (0.060 MG/day) = 2,271 ≈ <b>2,300 g/day</b>	cBOD <sub>5</sub> : (15 mg/L) X (3.785412 L/gal) X (1,000,000 gal/MG) X (g/1,000 mg) X (0.060 MG/day) = 3,406 ≈ <b>3,400 g/day</b>
TSS: (10 mg/L) X (3.785412 L/gal) X (1,000,000 gal/MG) X (g/1,000 mg) X (0.060 MG/day) = 2,271 ≈ <b>2,300 g/day</b>	TSS: (15 mg/L) X (3.785412 L/gal) X (1,000,000 gal/MG) X (g/1,000 mg) X (0.060 MG/day) = 3,406 ≈ <b>3,400 g/day</b>
TKN: (3.0 mg/L) X (3.785412 L/gal) X (1,000,000 gal/MG) X (g/1,000 mg) X (0.060 MG/day) = 681 ≈ <b>680 g/day</b>	TKN: (4.5 mg/L) X (3.785412 L/gal) X (1,000,000 gal/MG) X (g/1,000 mg) X (0.060 MG/day) = 1,022 ≈ <b>1,000 g/day</b>

### Loading Calculations for 0.099 MGD Facility (cBOD<sub>5</sub>, TSS & TKN)

Monthly Average	Weekly Average
cBOD <sub>5</sub> : (10 mg/L) X (3.785412 L/gal) X (1,000,000 gal/MG) X (g/1,000 mg) X (0.099 MG/day) = 3,748 ≈ <b>3,700 g/day</b>	cBOD <sub>5</sub> : (15 mg/L) X (3.785412 L/gal) X (1,000,000 gal/MG) X (g/1,000 mg) X (0.099 MG/day) = 5,621 ≈ <b>5,600 g/day</b>
TSS: (10 mg/L) X (3.785412 L/gal) X (1,000,000 gal/MG) X (g/1,000 mg) X (0.099 MG/day) = 3,748 ≈ <b>3,700 g/day</b>	TSS: (15 mg/L) X (3.785412 L/gal) X (1,000,000 gal/MG) X (g/1,000 mg) X (0.099 MG/day) = 5,621 ≈ <b>5,600 g/day</b>
TKN: (3.0 mg/L) X (3.785412 L/gal) X (1,000,000 gal/MG) X (g/1,000 mg) X (0.099 MG/day) = 1,124 ≈ <b>1,100 g/day</b>	TKN: (4.5 mg/L) X (3.785412 L/gal) X (1,000,000 gal/MG) X (g/1,000 mg) X (0.099 MG/day) = 1,686 ≈ <b>1,700 g/day</b>

**Attachment J**

**Nutrient Offset Plan**



## Plan to Offset Nitrogen and Phosphorus

With the addition of the new treatment system, the capacity of the treatment system will increase from 60,000 gpd to 99,000 gpd. The treatment system will be designed in accordance with 9VAC25-40 Regulation for Nutrient Enriched Waters and Discharges within the Chesapeake Bay watershed, which provides for the control of discharges from point sources affecting state waters that are designated “nutrient enriched waters” or are located within the Chesapeake Bay watershed, which includes the James River Basin, 9VAC25-720 Water Quality Management Planning Regulation, and §62.1-44.19:15 of the Code of Virginia, which establishes treatment technology and offset requirements for new and expanded facilities in the Chesapeake Bay watershed.

Per §62.1-44.19:15 of the Code of Virginia, an owner or operator of a facility authorized by a VPDES permit first issued before July 1, 2005, that expands his facility to discharge 40,000 gallons or more per day up to and including 99,999 gallons per day, or an equivalent load, directly into tidal or nontidal waters, shall demonstrate to the Department that he has acquired waste load allocations sufficient to offset any increase in his delivered total nitrogen and delivered total phosphorus loads resulting from any expansion beyond his permitted capacity as of July 1, 2005.

---

Per DEQ Guidance Memo No. 07-2008 Permitting Considerations for Facilities in the Chesapeake Bay Watershed, Table 1 summarizes total nitrogen and total phosphorous concentrations associated with levels of treatment technology as follows:

Parameter	Level of Technology	Concentration (mg/l)
Total N	Secondary	18.7
	BNR (Biological Nutrient Removal)	8
	SOA (State of the Art)	3
Total P	Secondary	2.5
	BNR	1
	SOA	0.3

DEQ Guidance Memo No. 07-2008, Table 2 summarizes the technology requirements for new and expanding facilities located in the Chesapeake Bay watershed as follows:

Proposed Design Flow	New Facility?	Receiving Stream	Minimum Treatment Technology
0.1 MGD > Q ≥ 0.04 MGD	No	Tidal or Non-Tidal	Secondary Treatment
0.1 MGD > Q ≥ 0.04 MGD	Yes	Tidal or Non-Tidal	BNR
0.5 MGD > Q ≥ 0.1 MGD		Non-Tidal	BNR
Q ≥ 0.1 MGD		Tidal	SOA
Q ≥ 0.5 MGD		Non-Tidal	SOA

However, 9VAC25-40-70 A.4. notes that the Board may establish a technology based standard and associated concentration limitation less stringent than the applicable standard specified, based on a demonstration by the owner that the specified standard is not technically or economically feasible, provided that the discharge achieve an annual total nitrogen waste load allocation and an annual total phosphorous waste load allocation required by the Water Quality Management Planning Regulation (9VAC25-720).

Based on the above tables 1 and 2 of the DEQ Guidance Memo and the current permit design flow of 60,000 gpd, the current waste load allocation for the Town of Surry WWTP is calculated as follows using secondary treatment level concentrations:



---

Total N:  $18.7 \text{ mg/l} \times 0.06 \text{ MGD} \times 8.3438 \text{ lbs/gal} \times 365 \text{ days/yr} = 3,417 \text{ pounds/yr}$

Total P:  $2.5 \text{ mg/l} \times 0.06 \text{ MGD} \times 8.3438 \text{ lbs/day} \times 365 \text{ days/yr} = 457 \text{ pound/yr}$

The maximum Total Nitrogen and Total Phosphorous limits required to offset the current waste load allocations at the revised permit flow of 99,000 gpd are calculated as follows:

$X \text{ mg/l TN} \times 0.099 \text{ MGD} \times 8.3438 \text{ lbs/gal} \times 365 \text{ days/yr} = 3,417 \text{ pounds/yr}$

$X = 11.33 \text{ mg/l TN}$

$X \text{ mg/l TP} \times 0.099 \text{ MGD} \times 8.3438 \text{ lbs/day} \times 365 \text{ days/yr} = 457 \text{ pound/yr}$

$X = 1.5 \text{ mg/l TP}$

Therefore, the Total Nitrogen must be lower than 11.33 mg/l and the Total Phosphorous must be lower than 1.5 mg/l to exactly offset the current waste load allocations with the increased permitted flow of 99,000 gpd and avoid the need to purchase nutrient credits for the difference.

Although the plant technically only needs to provide secondary treatment based on Table 2 of the DEQ Guidance Memo and meet a TN of 18.7 mg/l and a TP of 2.5 mg/l, the proposed treatment system will be designed to meet a total nitrogen limit of 8 mg/l and a total phosphorous limit of 1 mg/l in order to self offset its waste load allocation and to provide flexibility to meet potential changes in the future regulations.

Based on a revised permit design flow of 99,000 gpd, the future waste load allocation for the Town of Surry WWTP is calculated as follows:

Total N:  $8 \text{ mg/l} \times 0.099 \text{ MGD} \times 8.3438 \text{ lbs/gal} \times 365 \text{ days/yr} = 2,412 \text{ pounds/yr}$

Total P:  $1 \text{ mg/l} \times 0.099 \text{ MGD} \times 8.3438 \text{ lbs/day} \times 365 \text{ days/yr} = 302 \text{ pound/yr}$

The offset between the current and future waste load allocations is calculated as follows:

$$\Delta \text{ TN} = 2,412 \text{ lbs/yr} - 3,417 \text{ lbs/yr} = -1,005 \text{ lbs/yr}$$

$$\Delta \text{ TP} = 302 \text{ lbs/yr} - 457 \text{ lbs/yr} = -155 \text{ lbs/yr}$$

Therefore, the Town would not be required to purchase nutrient credits if the treatment plant is design to meet a Total Nitrogen limit of 8 mg/l and a Total Phosphorus limit of 1 mg/l.

The SBR treatment system will be designed in accordance with 9 VAC 25-790-710 of the Virginia Sewage Collection and Treatment (SCAT) regulations.

The tertiary filter will be designed in accordance with 9 VAC 25-790-860 of the SCAT regulations. The filters shall be sized for 99,000 gpd and designed to meet future permit limits of 8 mg/l of Total Nitrogen and 1 mg/l of Total Phosphorous.

**Attachment K**

**CTO for UV System Upgrades**



# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

### PIEDMONT REGIONAL OFFICE

4949-A Cox Road, Glen Allen, Virginia 23060

(804) 527-5020 Fax (804) 527-5106

[www.deq.virginia.gov](http://www.deq.virginia.gov)

Molly Joseph Ward  
Secretary of Natural Resources

David K. Paylor  
Director

Michael P. Murphy  
Regional Director

April 22, 2014

The Honorable Will Gwaltney, Jr.  
P.O. Box 314  
Surry, VA 23883

Subject: Certificate to Operate (CTO)  
Town of Surry Wastewater Treatment Plant UV System Upgrade  
PT Log # 26084

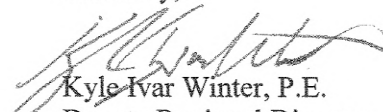
Dear Mayor Gwaltney:

In accordance with the Code of Virginia, Title 62.1, Section 62.1-44.19, attached please find the CTO for the subject project. The design engineer, Darrell Rickmond, P.E., certified in the Certificate to Operate (CTO) application received on March 20, 2014, that the project has been completed, substantially in accordance with the approved plans. The owner is authorized to operate these facilities in accordance with the Sewage Collection and Treatment Regulations.

Please be aware that the wastewater treatment plant's ultraviolet light disinfection system upgrade will affect the effluent limitations and monitoring requirements for Total Residual Chlorine (TRC) and *E coli*, as delineated in Part I.A and Part I.B of the facility's current VPDES permit (No. VA0061646). Please review the permit to ensure that the appropriate monitoring and reporting requirements are met.

If you would like further information regarding the project or if you have any questions regarding this matter, please contact Adam Eller at (804) 527-5046 or at [adam.eller@deq.virginia.gov](mailto:adam.eller@deq.virginia.gov).

Sincerely,

  
Kyle Ivar Winter, P.E.  
Deputy Regional Director

cc: Darrell Rickmond, P.E., Bowman Consulting: [drickmond@bowmanconsulting.com](mailto:drickmond@bowmanconsulting.com)  
Patrick Bishop, DEQ: [patrick.bishop@deq.virginia.gov](mailto:patrick.bishop@deq.virginia.gov)



RECEIVED PRO  
MAR 31 2014

March 28, 2014

Mr. Curtis Linderman  
Water Permit Manager  
Virginia Department of Environmental Quality  
4949-A Cox Road  
Glen Allen, Virginia 23060

Re: Town of Surry Wastewater Treatment Plant UV System Upgrade  
PTLog #25752  
BCG Project # 8142-01-001

Dear Mr. Linderman:

For your review please find the attached one (1) copy of the Application for Certificate to Operate (CTO) for the referenced wastewater treatment plant upgrades.

If you should have any questions or comments, please feel free to contact me at (757) 229-1776.

Sincerely,  
BOWMAN CONSULTING GROUP, LTD.

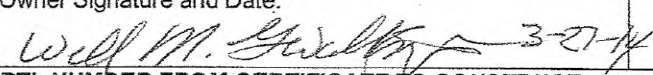
Darrell Rickmond  
Vice President Business Development

cc: Mr. Will Gwaltney, Jr., Mayor of Town of Surry

P:\8142 - Town of Surry\8142-01-001 (ENG) - WWTP\_WTP Upgrades\Engineering\Correspondence\Sent\ltr for CTO application.dr.3.28.14.docx

**Department of Environmental Quality**  
**APPLICATION for CERTIFICATE TO OPERATE**  
**Under the Sewage Collection and Treatment Regulations 9 VAC 25-790**  
**and/or the Water Reclamation and Reuse Regulation 9 VAC 25-740**

See instructions. Submit 1 copy of this form and any attachments. Form will expand as you enter information.

Project Title: (as it appears on plans) Town of Surry Wastewater Treatment Plant UV System Upgrade	
P.E. Seal Date on Cover: November 15, 2012	
Specifications Title and Date: N/A	
Location of Project: 1/2 Mile SW of Route 10/31 Intersection	County/City: Surry, Virginia
Receiving Wastewater Collection System(s): N/A	
Receiving Sewage Treatment Plant(s): N/A	
<b>PROJECT OWNER: Town of Surry</b>	<b>RESPONSIBLE ENGINEER</b>
Owner Contact Name: Mr. Will Gwaltney, Jr.	Name: Darrell Rickmond
Title: Mayor	Company Name: Bowman Consulting
Address: PO Box 314 Surry, VA 23883	Address: 460 McLaws Circle, Suite 120 Williamsburg, VA 23185
Phone: 757-294-3021	Phone: 757-229-1776
Email:	Email: drickmond@bowmanconsulting.com
Owner Signature and Date:  3-21-14	

**PTL NUMBER FROM CERTIFICATE TO CONSTRUCT: 25752**

**Attach** Copy of the original Certificate to Construct if issued prior to November 9, 2008. If applicable, provide verification of compliance with any conditions in the Certificate to Construct.

Design Flow: (a) average daily flow (MGD): 0.060 (b) peak flow (MGD): \_\_\_\_\_

For sewage treatment plant, water reclamation or satellite reclamation projects, provide the VPDES/VPA Permit Number:  
VA0061646

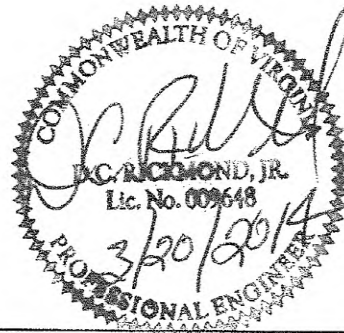
Is a new Discharge Monitoring Report (DMR) or other monthly monitoring report required? Yes ☐ No ☒

For Pump Stations, Sewage Treatment Plants, and Reclamation Systems, check Reliability Class: I ☐ II ☒ III ☐  
 NA ☐

Two options are provided for the Statement of Completion, depending on whether the project is being authorized under the Sewage Collection and Treatment Regulations, the Water Reclamation and Reuse Regulations, or BOTH. Please check the appropriate box and then provide signature and seal below as indicated.

☒ The following statement of completion for issuance of a Certificate to Operate under the Sewage Collection and Treatment Regulations must be signed and sealed by the responsible engineer. (DEQ will not conduct a confirming inspection.)

***"The construction of the project has been completed in accordance with the referenced plans and specifications or revised only in accordance with 9 VAC 25-790-180.B, and inspections have been performed to make this statement in accordance with Section 9 VAC 25-790-180.C.1 of the Sewage Collection and Treatment Regulations."***



Licensed Engineer's Signature and original seal (signed and dated)



.....  
For DEQ use only:

In accordance with Code of Virginia 1950, as amended, Title 62.1, Section 62.1-44.19, this form, signed by the appropriate DEQ representative, serves as the **Certificate to Operate** for the referenced project.

Kyle J. Williams

Name

  
Signature

4/22/14

Date

26084

CTO PTL Number

Department of Environmental Quality Authorized Representative

An Operation and Maintenance Manual must be submitted to the DEQ Regional Office in accordance with 9 VAC 25-790 for sewage treatment plants, 9 VAC 25-740 for water reclamation systems and satellite reclamation systems and VPDES or VPA permit requirements.

For pump stations, an Operation and Maintenance Manual must be maintained for the facility in accordance with 9 VAC 25-790, but is NOT to be submitted to DEQ. The pump station must be operated and maintained in accordance with that manual.

**Attachment L**

**CTC for 0.099 MGD Facility Upgrades**



# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218

[www.deq.virginia.gov](http://www.deq.virginia.gov)

Molly Joseph Ward  
Secretary of Natural Resources

David K. Paylor  
Director

(804) 698-4000  
1-800-592-5482

November 19, 2015

Surry County  
Town of Surry WWTF  
VA0061646, PTL# 26318  
Certificate to Construct

Honorable Mayor Will Gwaltney, Jr.  
Town of Surry  
31 Colonial Trail E.  
Surry, VA 23883

Dear Mayor Gwaltney:

This Department has received plans and specifications for the upgrade to the Town of Surry Wastewater Treatment Facility (WWTF) as prepared by Bowman Consulting. The plans consist of thirty four (34) sheets entitled "Town of Surry Wastewater Treatment Plant, Surry County, Virginia" and bear a P. E. seal dated November 5, 2015. The specifications are entitled "Town of Surry, Wastewater Treatment Plant Upgrades, Surry County, Virginia".

The Water Quality Improvement Fund (WQIF) Grant Eligible components of this project consist of Pre-equalization Tank, Sequential Batch Reactor (SBR), Post Equalization Tank, Sludge Digestion, Tertiary Filtration and Chemical Addition.

The 50,000 gallon Pre-Equalization Tank is equipped with coarse bubble diffusers for air injection at 109 Standard Cubic Feet per Minute (SCFM), and three (3) submersible pumps, each at 120 gallons per minute (gpm) at 22.7 feet of Total Dynamic Head (TDH). The two (2) SBRs are each 91,000 gallon capacity. They will be equipped with 3 HP Floating mechanical mixers as well as Floating Decanters. Each SBR will be equipped with one (1) sludge wasting pump with a capacity of 122 gpm at 7.3 feet of TDH. Each SBR will also be furnished with two (2) retrievable coarse bubble assemblies capable of delivering air at 276 SCFM per basin. The 20,843 gallon post equalization basin is equipped with one (1) mechanical aerator and three (3) submersible pumps, each at 110 gpm at 22.9 feet of TDH. The 43,700 gallon aerobic digester will be equipped with fixed coarse bubble diffusers capable of delivering air at 176 SCFM. It will be furnished with one (1) submersible pump at 180 gpm at 17.4 feet of TDH. Tertiary filtration will be provided with one (1) horizontally mounted cloth media drum filter with automatically operated vacuum backwash and solids removal. The effective submerged filter area will be 43.1 ft<sup>2</sup> yielding a filtration rate of 1.6 gpm/ft<sup>2</sup> at average flow and 4 gpm/ft<sup>2</sup> at peak flow. Magnesium Hydroxide will be added for alkalinity addition/pH control and alum will be added for phosphorus reduction. Two (2) Magnesium Hydroxide metering pumps and three (3) alum (2 duty, 1 spare) metering pumps will be furnished to that end. All blowers will be rotary, positive displacement type. Blower capacities will be 276, 176 and 109 SCFM for the SBRs, Aerobic Digester and Pre-Equalization basin, respectively. Certain components of this upgrade, not funded by WQIF moneys, are not described here.

This upgrade is designed for an average flow of .099 MGD with peak flow of 0.25 MGD with a peak factor of 2.53. It will aid this facility in complying with CBOD<sub>5</sub> of 10 mg/l; Suspended Solids of 10.0 mg/l; TKN of 3.0 mg/l; Ammonia-N of 1.72 mg/l; pH of 6.0 (Minimum) and 9.0(Maximum); Dissolved Oxygen of 5.0 mg/l (minimum); and *E. coli* (Geometric Mean) of 126 N/100 ml. It will also help achieve Calendar Year Averages of 8.0 mg/l of Total Nitrogen and 1.0 mg/l of Total Phosphorous. In addition, the facility will be required to meet effluent values for Total Recoverable Copper of 3.8 µg/l and Total Recoverable Zinc of 37µg/l.

This Department has already received the "Non-WQIF Funded Component Certification" with a P. E. seal date of November 5, 2015 for the non-funded portions of this project (not described here).

The evaluation of these plans and specifications has been confined to technical requirements and design criteria as stipulated in the Commonwealth of Virginia's Sewage Collection and Treatment (SCAT) Regulations (9 VAC 25-790).

**In accordance with the Code of Virginia 1950, as amended, Title 62.1, Section 62.1-44.19, this letter report is to advise that previously mentioned plans and specifications are technically adequate and are approved.**

This letter provides your authorization to construct the previously described project. This approval is valid for a period of five (5) years from the date of this letter. Please be aware that disturbance of any streams and/or wetlands may also require permitting. If you believe that this may be the case, please contact DEQ's Piedmont Regional Office at (804)-527- 5020 for further information.

Please note: The DEQ CWFAP/ Wastewater Engineering approvals and staff knowledge of project status and project issues do not substitute for nor relieve any parties from compliance with requirements for other DEQ divisions, including WQIF Grant and CWFAP Loan programs, consent orders, permits, and other regulatory and enforcement matters of DEQ and other agencies.

One copy of the previously described plans and specifications, with appropriate approval stamps, is enclosed.

An engineer's Statement of Completion must be submitted to this Office in order to initiate CTO procedures.

Sincerely,



Walter A. Gills, Program Manager  
CWFAP  
Central Office

cc: Bowman Consulting (Jessica Kwiatkowski, P.E.)  
CWFAP (J. S. Desai, Mike Crocker, Steve Raney)  
PRO (Emilee Adamson)

**Attachment M**

**Site Inspection Report**



# *COMMONWEALTH of VIRGINIA*

## *DEPARTMENT OF ENVIRONMENTAL QUALITY*

### PIEDMONT REGIONAL OFFICE

4949-A Cox Road, Glen Allen, Virginia 23060

(804) 527-5020 Fax (804) 527-5106

[www.deq.virginia.gov](http://www.deq.virginia.gov)

Molly Joseph Ward  
Secretary of Natural Resources

David K. Paylor  
Director

Michael P. Murphy  
Regional Director

August 17, 2015

Mr. Will Gwaltney, Mayor  
Town of Surry  
P.O. Box 314  
Surry, VA 23883

Transmitted electronically to: [townofsurry@aol.com](mailto:townofsurry@aol.com)

RE: VPDES Permit VA0061646 – Town of Surry Wastewater Treatment Facility –  
FY15 Inspection Report

Dear Mr. Gwaltney:

Enclosed are your copies of the technical and laboratory reports for the inspections conducted at the above referenced facility on July 9, 2015. Please read the reports carefully, paying special attention to the 'Request for Action' items on page seven of the technical report and page three of the lab report. Please respond to the 'Request for Action' items identified in both reports by September 17, 2015.

I would like to thank Mr. Lathrop and Mr. Finch for the time and courtesy extended to us during the inspection. Should you have any questions about the reports, please do not hesitate to contact me at 804-527-5011 or via email at [azra.bilalagic@deq.virginia.gov](mailto:azra.bilalagic@deq.virginia.gov).

Sincerely,

A handwritten signature in blue ink that reads 'Azra Bilalagic'.

Azra Bilalagic  
Water Compliance Inspector

Attachments

Cc: Robert Finch, contract operator (sent via e-mail to: [rpfinch@verizon.net](mailto:rpfinch@verizon.net))

# Virginia Department of Environmental Quality

## WASTEWATER FACILITY INSPECTION REPORT

<b>FACILITY NAME and ADDRESS:</b> Town of Surry Wastewater Treatment Facility 11463 Rolfe Highway Surry, VA 23883		<b>INSPECTION DATE:</b> July 9, 2015 <b>INSPECTORS:</b> Heather Deihls <div style="background-color: black; width: 100px; height: 1.2em; display: inline-block;"></div> Azra Bilalagic; 8/17/2015	
<b>PERMIT No.:</b> VA0061646		<b>REPORT DATE:</b> August 17, 2015	
<b>TYPE OF FACILITY:</b> <input checked="" type="checkbox"/> Municipal <input checked="" type="checkbox"/> Small Minor <input type="checkbox"/> Industrial <input type="checkbox"/> Federal		<b>TIME OF INSPECTION:</b> 09:05 Arrival      11:09 Departure	<b>TOTAL TIME SPENT</b> 35 hours
<b>PHOTOGRAPHS:</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<b>UNANNOUNCED INSPECTION?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>REVIEWED BY / Date:</b> <div style="background-color: black; width: 100px; height: 1.2em; display: inline-block;"></div> ; 8/17/15			
<b>PRESENT DURING INSPECTION:</b> Mike Lathrop (Operator in training), Robert Finch (Chief Operator) via phone conversation, Somsiri Youngpattana (DEQ)			

### TECHNICAL INSPECTION

1. Has there been any new construction? • If so, were plans and specifications approved? <u>Comments:</u> The Certificate to Construct (CTC) was issued on November 29, 2012 for the ultraviolet light disinfection system upgrade. On April 22, 2014 the facility received the Certificate to Operate (CTO) for the UV system upgrade.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Is the Operations and Maintenance Manual approved and up-to-date? <u>Comments:</u> Not determined – a comprehensive review of the manual was not completed.	<input type="checkbox"/> Yes <input type="checkbox"/> No
3. Are the Permit and/or Operation and Maintenance Manual specified licensed operator being met? <u>Comments:</u> The permit requires one Class III licensed wastewater works operator for this facility. The facility has: Class I - 1, Class III - 2, OIT - 1.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
4. Are the Permit and/or Operation and Maintenance Manual specified operator staffing requirements being met? <u>Comments:</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
5. Is there an established and adequate program for training personnel? <u>Comments:</u> Sacramento Course, VRWA and DEQ training classes as available.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
6. Are preventive maintenance task schedules being met? <u>Comments:</u> The chief operator reported that the plant has an established preventative maintenance system that includes daily, weekly, monthly, semi-annual and annual PM tasks.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
7. Does the plant experience any organic or hydraulic overloading? <u>Comments:</u> The impact of hydraulic overloading due to I&I issue was causing solids loss at the time of inspection.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
8. Has there been any bypassing or overflows since the last inspection? <u>Comments:</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
9. Is the standby generator (including power transfer switch) operational and exercised regularly? <u>Comments:</u> The generator is exercised 30 minutes per week.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
10. Is the plant alarm system operational and tested regularly? <u>Comments:</u> The plant does not have an operational alarm system.	<input type="checkbox"/> Yes <input type="checkbox"/> No Not applicable

# VA DEQ Wastewater Facility Inspection Report

Permit #	VA0061646
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## TECHNICAL INSPECTION

11. Is sludge disposed of in accordance with the approved sludge management plan? <u>Comments:</u> Sludge and scum is pumped and hauled by Duck Septic Pumping and disposed of to a contractor's permitted septic waste disposal site.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
12. Is septage received? • If so, is septage loading controlled, and are appropriate records maintained? <u>Comments:</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
13. Are all plant records (operational logs, equipment maintenance, industrial waste contributors, sampling and testing) available for review and are records adequate? <u>Comments:</u> Not reviewed.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
14. Which of the following records does the plant maintain? <div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Operational logs           <input type="checkbox"/> Instrument maintenance &amp; calibration         </div> <div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Mechanical equipment maintenance           <input type="checkbox"/> Industrial Waste Contribution (Municipal facilities)         </div> <u>Comments:</u> Not reviewed.	
15. What does the operational log contain? <div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Visual observations           <input type="checkbox"/> Flow Measurement           <input type="checkbox"/> Laboratory results           <input type="checkbox"/> Process adjustments         </div> <div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Control calculations           <input type="checkbox"/> Other (specify)           <div style="border: 1px solid black; width: 300px; height: 20px;"></div> </div> <u>Comments:</u> Not reviewed.	
16. What do the mechanical equipment records contain? <div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> As built plans and specs           <input type="checkbox"/> Manufacturers instructions           <input type="checkbox"/> Lubrication schedules         </div> <div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Spare parts inventory           <input type="checkbox"/> Equipment/parts suppliers         </div> <div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Other (specify)           <div style="border: 1px solid black; width: 300px; height: 20px;"></div> </div> <u>Comments:</u> Not reviewed.	
17. What do the industrial waste contribution records contain (Municipal only)? <div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Waste characteristics           <input type="checkbox"/> Impact on plant           <input type="checkbox"/> Locations and discharge types         </div> <div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Other (specify)           <div style="border: 1px solid black; width: 300px; height: 20px;"></div> </div> <u>Comments:</u> Not applicable.	
18. Which of the following records are kept at the plant and available to personnel? <div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Equipment maintenance records           <input type="checkbox"/> Operational log           <input type="checkbox"/> Industrial contributor records         </div> <div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Instrumentation records           <input type="checkbox"/> Sampling and testing records         </div> <u>Comments:</u> Not reviewed.	
19. List records not normally available to plant personnel and their location: <u>Comments:</u> Not applicable.	
20. Are the records maintained for the required time period (three or five years)? <u>Comments:</u> Not reviewed.	<input type="checkbox"/> Yes <input type="checkbox"/> No



# VA DEQ Wastewater Facility Inspection Report

Permit #

VA0061646

## UNIT PROCESS EVALUATION SUMMARY SHEET

UNIT PROCESS	APPLICABLE	PROBLEMS*	COMMENTS
Sewage Pumping	X		
Flow Measurement (Influent)			
Screening/Comminution	X		
Grit Removal			
Oil/Water Separator			
Flow Equalization			
Ponds/Lagoons			
Imhoff Tank	X		
Primary Sedimentation			
Trickling Filter			
Septic Tank and Sand Filter			
Rotating Biological Contactor	X	6	Somewhat thin biomass coverage was present in the RBC units.
Activated Sludge Aeration			
Biological Nutrient Removal			
Sequencing Batch Reactor			
Secondary Sedimentation	X	1	The secondary clarifiers had rising sludge topping the weirs.
Flocculation			
Tertiary Sedimentation			
Filtration			
Micro-Screening	X	1	The operator reported that one of the units is not operating continuously.
Activated Carbon Adsorption			
Chlorination			
Dechlorination			
Ozonation			
Ultraviolet Disinfection	X	1	One of the UV units was not operable at the time of inspection.
Post Aeration	X		
Flow Measurement (Effluent)	X		
Land Application (Effluent)			
Plant Outfall	X	2	Effluent appeared slightly cloudy.
Sludge Pumping	X		
Flotation Thickening (DAF)			
Gravity Thickening			
Aerobic Digestion			
Anaerobic Digestion			
Lime Stabilization			
Centrifugation			
Sludge Press			
Vacuum Filtration			
Drying Beds	X		
Thermal Treatment			
Incineration			
Composting			
Land Application (Sludge)			

### \* Problem Codes

- Unit Needs Attention
- Abnormal Influent/Effluent
- Evidence of Equipment Failure
- Unapproved Modification or Temporary Repair
- Evidence of Process Upset
- Other (explain in comments)

# VA DEQ Wastewater Facility Inspection Report

Permit #

VA0061646

## INSPECTION OVERVIEW AND CONDITION OF TREATMENT UNITS

On July 2, 2015 an anonymous complaint was received that the facility needed to be viewed based on poor effluent quality and the plant being operated by an unlicensed operator. On July 9, 2015 an inspection was conducted at the Town of Surry WWTF to follow-up on the complaint and to assess any environmental impacts. The DEQ team performed a sampling inspection and collected CBOD, TSS, Ammonia, TKN, Total Phosphorous and E. Coli samples at Outfall 001. The inspectors also conducted E. Coli samples upstream and downstream from the outfall. Field measurements for pH, conductivity, and dissolved oxygen were recorded at the outfall, upstream and downstream from the outfall. A sampling inspection report will follow once the results are available from DCLS.

**Screening** - This unit consists of a coarse bar rack. Screenings are removed once to two times per day and placed in the drying bed. Volume of screenings removed is approximately 2-3 cubic feet per day.

**Clarigester** - Floating/rising dark colored sludge was observed in the clarigester. The scum collection system is not working properly and the operator manually pushes solids into the collection pipe. Sludge from the outside ring in the clarigester is removed as needed and placed in the drying bed. The operator on site reported that the volume of sludge removed is approximately 5,000 gallons per month. Sludge from the center of the clarigester cone is removed approximately every two to three months and disposed of by a septic hauler.

**Rotating Biological Contactors** - Wastewater from the clarigester gravity flows to the RBCs. There are two enclosed trains (Unit #1 and Unit #2). An operational blower is present to provide the aeration if needed. The chief operator reported that the TKN and CBOD<sub>5</sub> removals are monitored weekly with no indication that the aeration is needed. The RBCs were originally equipped with heaters; however the units are currently rusted and have not functioned for years. The chief operator indicated that there are no freezing problems with the RBC units. The drain valve from the RBC units is opened monthly for a few minutes to clean out any solids buildup. During the inspection, the RBCs were in good condition and the rotation appeared smooth (uniform). The biomass coverage in the beginning of the units appeared slightly thin and medium brown colored. The biomass coverage at the end of Unit 2 was very thin and Unit 1 had almost no biomass. The wastewater leaving the RBCs appeared cloudy and contained some suspended solids.

**Secondary Clarifiers** - This unit consists of two clarifiers that are used simultaneously. At the time of inspection, the secondary clarifiers had rising sludge topping the weirs. It was reported that the plant has been experiencing I&I issues due to rain. I&I can dilute the influent to a less than optimum "strength" and increase velocity through the plant. The result can be poor settling in the clarigester, poor growth on the RBCs, and solids loss from the clarifiers. Similar conditions were noted during the 2012 and 2014 inspections. Rising solids were present in the center and outer ring of the clarifiers. The wastewater in the clarifiers appeared slightly cloudy. The clean water trough is reportedly cleaned weekly or more often as needed. The operator manually rakes scum into the scum pipe. Return sludge is controlled by a timer that automatically pumps down the return sludge well and allows for return sludge flow. The timer is on 15 minutes per hour.

**Microscreening** - This unit consists of two microscreens. The backwash cycle is 8 minutes on and 15 minutes off. The backwash wastewater is directed back to the head of the plant. At the time of inspection only one microscreen was in operation. The operator reported that the second microscreen stops operating after 15 minutes, and that the operator is required to manually turn it on. Based on the amount of solids leaving the clarifier, the second microscreen is needed to help control solids.

**UV disinfection system** - The UV system was placed in service in 2014. The UV system consists of two units and the operator on site reported that normally one unit is operated at a time. At the time of inspection, the operator reported that one of the units is not operational due to the electrical problems. The facility is in the process of repairing the unit. Maintenance on the bulbs is performed on a weekly basis. Each UV unit consists of 12 bulbs. The operator noted that the facility placed the UV lights on the top of the units instead on the bottom to prevent the accumulation of solids on the bulbs. The UV system is manufactured by Infilco Degamont and each unit is designed to treat 250,000 gallons of wastewater.

**Chlorination and dechlorination** - Following the inspection, during the phone interview on 7/27/2015, Mr. Robert Finch indicated that the plant started to use chlorine gas in addition to the UV disinfection system to address the E. Coli excursions. This was also noted on the June 2015 DMR. The chlorine system was placed in service on 6/26/15. Chlorination and dechlorination units were not observed at the time of inspection.

**Drying Beds** - A roof covering the beds is present. Material in the drying bed had been in place for 30 days according to the chief operator. The material in the drying bed appeared wet and strong odor was present at the time of inspection.

# VA DEQ Wastewater Facility Inspection Report

Permit #	VA0061646
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## INSPECTION OVERVIEW AND CONDITION OF TREATMENT UNITS

**Wet well** – Return sludge from the clarifiers is sent to the wet well. Normally, two pumps are used to pump the sludge to the clarigester. The operator reported that the pumps were not operational for approximately one month, and the facility used a portable pump to send the sludge to the clarigester. Dry sludge residual was observed on the ground in the vicinity of the RBC units and next to the hose connected to the portable pump. The operator reported that the connecting hose had pinholes and the sludge was most likely spilled on the ground while being pumped to the clarigester. The portable pump is no longer used since the facility repaired the pumps a few weeks ago. The sludge spillage was not reported to DEQ.

**Sewage Pumping** - The Plant Drain pump station receives underflow from the drying beds, the drain from the RBC units, wastewater from the lab, chlorine contact tank drain, two tanks in the microscreen room, and the floor drain in the sludge pump room. The wastewater is pumped to the head of the plant.

**Flow Measurement** - A V-notch weir with electronic indicator is used for flow measurement. The flow meter was calibrated on September 9, 2014.

**Post Aeration** - Cascade aerator follows the flow measurement.

**Outfall** - Effluent was slightly cloudy and settled solids were observed in the pools and bends of the receiving stream. Water in the receiving stream appeared clear. Light brown colored foam was observed in the receiving stream approximately 60 feet downstream from the outfall.

# VA DEQ Wastewater Facility Inspection Report

Permit #	VA0061646
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## EFFLUENT FIELD DATA:

<b>Flow</b> <input style="width: 50px;" type="text"/> MGD	<b>Dissolved Oxygen</b> <input style="width: 50px;" type="text"/> 7.86 mg/L	<b>TRC (Contact Tank)</b> <input style="width: 50px;" type="text"/> mg/L
<b>pH</b> <input style="width: 50px;" type="text"/> 6.61 S.U.	<b>Temperature</b> <input style="width: 50px;" type="text"/> 21.37 °C	<b>TRC (Final Effluent)</b> <input style="width: 50px;" type="text"/> mg/L
<b>Was a Sampling Inspection conducted?</b> <input checked="" type="checkbox"/> Yes (see Sampling Inspection Report) <input type="checkbox"/> No		

## CONDITION OF OUTFALL AND EFFLUENT CHARACTERISTICS:

1. Type of outfall: <input checked="" type="checkbox"/> Shore based <input type="checkbox"/> Submerged	Diffuser? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Are the outfall and supporting structures in good condition? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
3. Final Effluent (evidence of following problems): <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <span><input checked="" type="checkbox"/> Sludge bar</span> <span><input type="checkbox"/> Grease</span> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <span><input checked="" type="checkbox"/> Turbid effluent</span> <span><input type="checkbox"/> Visible foam</span> <span><input type="checkbox"/> Unusual color</span> <span><input type="checkbox"/> Oil sheen</span> </div>	
4. Is there a visible effluent plume in the receiving stream? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Receiving stream: <input type="checkbox"/> No observed problems <input checked="" type="checkbox"/> Indication of problems (explain below)	
<u>Comments:</u> Settled sludge was observed in the receiving stream (Unnamed Tributary to Dark Swamp). Additionally, white and light brown colored foam was observed in the receiving stream approximately 60 feet downstream from the outfall.	

# VA DEQ Wastewater Facility Inspection Report

Permit #

VA0092584

## REQUEST for ACTION ITEMS:

1. Settled sludge solids were noted in the receiving stream. Part II.F of VPDES Permit VA0061646 effective October 13, 2011 states, *"Unauthorized Discharges. Except in compliance with this permit, or another permit issued by the Board, it shall be unlawful for any person to:*
  1. *Discharge into state waters sewage, industrial wastes, other wastes, or any noxious or deleterious substances; or*
  2. *Otherwise alter the physical, chemical or biological properties of such state waters and make them detrimental to the public health, or to animal or aquatic life, or to the use of such waters for domestic or industrial consumption, or for recreation, or for other uses"*
2. Notification of the discharge of solids could not be located in DEQ files. Part II.G of VPDES Permit VA0061646 effective October 13, 2011 states, *"Reports of Unauthorized Discharges. Any permittee who discharges or causes or allows a discharge of sewage, industrial waste, other wastes or any noxious or deleterious substance into or upon state waters in violation of Part II F 1; or who discharges or causes or allows a discharge that may reasonably be expected to enter state waters in violation of Part II F 1, shall notify the Department of the discharge immediately upon discovery of the discharge, but in no case later than 24 hours after said discovery. A written report of the unauthorized discharge shall be submitted to the Department, within five days of discovery of the discharge."*
3. Following the inspection, the chief operator reported that the existing backflow preventers are non functional and bypassed and that they will be repaired within the next 30-60 days. In your response to this report, please provide the date when the back flow prevention devices are scheduled to be repaired. The cross connection control devices should also be checked annually.
4. Following the inspection, during the phone interview on 7/27/2015, Mr. Robert Finch indicated that the plant started to use chlorine gas in addition to the UV disinfection system to address the E. Coli excursions. This was also noted on the June 2015 DMR. Part I.B.1 of VPDES Permit VA0061646 effective October 13, 2011 limits total chlorine residual. The permit requires three readings per day at four hour intervals. The permittee did not report monthly or weekly averages as required by the permit.

## COMMENTS and GENERAL RECOMMENDATIONS:

1. The Town of Surry WWTF is under a consent order to upgrade the wastewater treatment plant to achieve consistent compliance with all permit effluent limits. The proposed project includes upgrading the existing wastewater treatment plant with a sequencing batch reactor (SBR) and tertiary filtration that will be rated for 99,000 gpd. The proposed system will include a new microscreen/auger at the headworks, flow equalization, SBR basin, post equalization, a sludge digester and tertiary filtration.
2. A small amount of dry sludge residue was observed on the ground in the vicinity of the RBC units. The permittee should properly remediate and lime the areas of incidental spills.
3. The permittee may wish to repair or replace the portable pump hose before placing it back in service.
4. A sampling inspection report will follow once the results are available from DCLS.

# VA DEQ Wastewater Facility Inspection Report

Permit #

VA0061646

Digital Photographs Taken: 7/9/2015



Photograph 1: Bar screen



Photograph 2: Clarigester



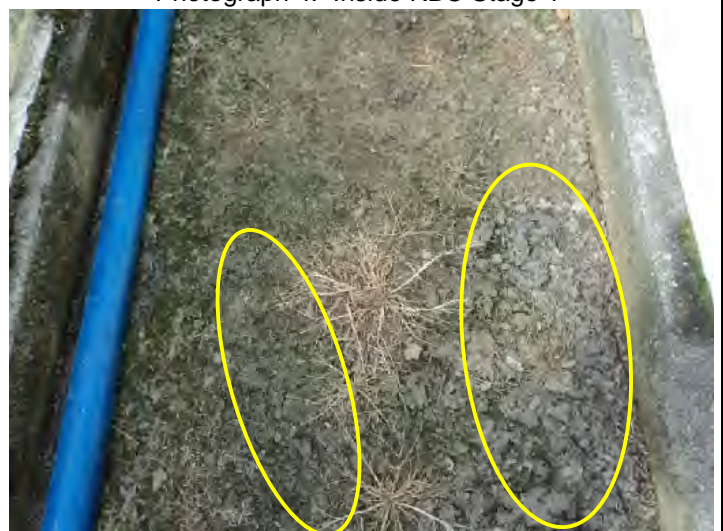
Photograph 3: Solids inside clarigester cone



Photograph 4: Inside RBC Stage 1



Photograph 5: Inside RBC Stage 3



Photograph 6: Dry sludge on the ground between two RBC units



# VA DEQ Wastewater Facility Inspection Report

Permit #

VA0061646

Digital Photographs Taken: 7/9/2015



Photograph 7: A portable pump was temporary used to pump sludge to the clarifier



Photograph 8: Sludge return pump station



Photograph 9: Clarifier – rising solids leaving tank



Photograph 10: Microscreen



Photograph 11: UV disinfection system



Photograph 12: Solids in the final effluent tank



# VA DEQ Wastewater Facility Inspection Report

Permit #

VA0061646

Digital Photographs Taken: 7/9/2015



Photograph 13: V-notch weir and step cascade post aeration



Photograph 14: Dechlorination units



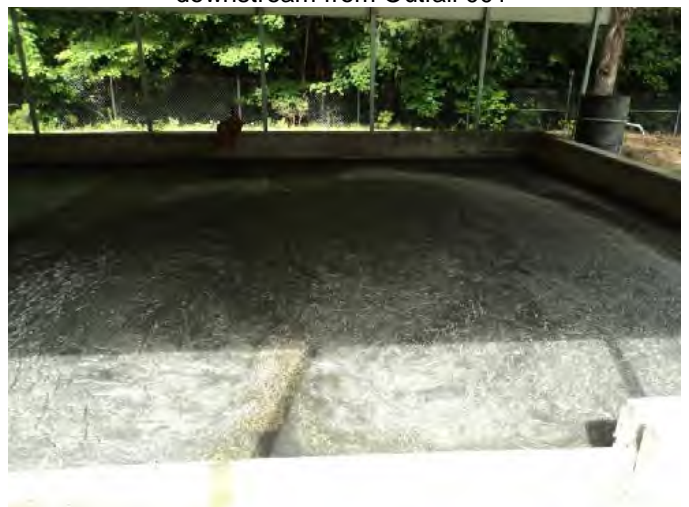
Photograph 15: Outfall 001



Photograph 16: Settled solids in the receiving stream downstream from Outfall 001



Photograph 17: White and light brown foam in the receiving stream



Photograph 18: Sludge drying bed



**DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION  
LABORATORY INSPECTION REPORT**

04/2014

<b>PERMIT #:</b> VA0061646	<b>INSPECTION DATE:</b> July 9, 2015	<b>PREVIOUS INSP. DATE:</b> July 24, 2012	<b>PREVIOUS EVALUATION:</b> Deficiencies- Lab equipment, pH and TRC analysis procedures	<b>TIME SPENT:</b> 35 hours w/ travel & report
<b>NAME/ADDRESS OF FACILITY:</b> Town of Surry WWTF P.O. Box 314 Surry, VA 23883  Facility located at 11463 Rolfe Hwy, Surry, VA 23883	<b>FACILITY CLASS:</b> ( ) MAJOR (X) MINOR ( ) MINOR (Small) ( ) VPA	<b>FACILITY TYPE:</b> (X) MUNICIPAL ( ) INDUSTRIAL ( ) FEDERAL	<b>UNANNOUNCED INSPECTION?</b> (X) YES ( ) NO	
			<b>FFY-SCHEDULED INSPECTION?</b> ( ) YES (X) NO	
<b>INSPECTOR(S):</b> Heather Deihls Azra Bilalagic; 8/17/2015		<b>REVIEWER(S):</b> [Redacted]; 8/6/15	<b>PRESENT AT INSPECTION:</b> Mike Lathrop (Operator in training), Robert Finch (Operator) via phone conversation, Somsiri Youngpattana (DEQ)	

LABORATORY EVALUATION	DEFICIENCIES?	
	Yes	No
LABORATORY RECORDS	X	
GENERAL SAMPLING AND ANALYSIS		X
pH PROCEDURE		X
TOTAL RESIDUAL CHLORINE PROCEDURES - <i>NOT EVALUATED</i>		
DISSOLVED OXYGEN PROCEDURES		X
OTHER		

VELAP CERTIFICATION (on site Environmental Laboratory)	Yes	No
Does the laboratory have VELAP certification (interim or final)?	N/A	
- Document the laboratory's VELAP laboratory number:		
- Document the effective date of the VELAP certification:		
- Document the expiration date of the VELAP certification:		
- List the certified parameters:		

VELAP ACCREDITATION (Commercial Environmental Laboratory)			Yes	No
IS A VELAP ACCREDITED LAB USED FOR PERMIT REQUIRED ANALYSES? VELAP#, LAB NAME, ADDRESS and LIST PARAMETERS:			YES	
VELAP #	LAB NAME	PARAMETERS		
460013	James R. Reed & Associates 770 Pilot House Drive, Newport News, VA 23606	E. Coli, TKN, CBOD <sub>5</sub> , Ammonia, TSS, Total Recoverable Zinc, Total Recoverable Copper		
IF PERMIT REQUIRED SAMPLE ANALYSIS IS PERFORMED AT ANOTHER LOCATION, ARE SHIPPING PROCEDURES ADEQUATE?			YES	

**COPIES:** ( ) DEQ - RO; (X) Owner, ( ) Other:

### LABORATORY RECORDS SECTION

LABORATORY RECORDS INCLUDE THE FOLLOWING:

<input checked="" type="checkbox"/>	SAMPLING DATE	<input checked="" type="checkbox"/>	ANALYSIS DATE	<input type="checkbox"/>	CONT MONITORING CHART
<input checked="" type="checkbox"/>	SAMPLING TIME	<input checked="" type="checkbox"/>	ANALYSIS TIME	<input checked="" type="checkbox"/>	INSTRUMENT CALIBRATION
<input checked="" type="checkbox"/>	SAMPLE LOCATION	<input checked="" type="checkbox"/>	TEST METHOD	<input type="checkbox"/>	INSTRUMENT MAINTENANCE
				<input checked="" type="checkbox"/>	CERTIFICATE OF ANALYSIS

WRITTEN INSTRUCTIONS INCLUDE THE FOLLOWING:

<input checked="" type="checkbox"/>	SAMPLING SCHEDULES	<input type="checkbox"/>	CALCULATIONS	<input checked="" type="checkbox"/>	ANALYSIS PROCEDURES
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	YES	NO	N/A
DO ALL ANALYSTS INITIAL THEIR WORK?	X		
DO BENCH SHEETS (or LOG BOOK) INCLUDE ALL INFORMATION NECESSARY TO DETERMINE RESULTS?	X		
IS THE DMR COMPLETE AND CORRECT? LIST MONTH(S) REVIEWED: <b>June 2015 DMR and associated data.</b>		X	
ARE ALL MONITORING VALUES REQUIRED BY THE PERMIT REPORTED?	X		
DOES CHAIN OF CUSTODY DOCUMENT PROPER SAMPLE PRESERVATION WAS MET?	X		
WHEN THE CERTIFICATE OF ANALYSIS CONTAINS FLAGGED DATA IS THE 'FLAG' REPORTED ON THE DMR?		X	

### GENERAL SAMPLING AND ANALYSIS SECTION

	YES	NO	N/A
ARE SAMPLE LOCATIONS ACCORDING TO PERMIT REQUIREMENTS?	X		
ARE PERMIT REQUIRED SAMPLE COLLECTION PROCEDURES APPROPRIATE?	X		
ARE EFFLUENT SAMPLES REPRESENTATIVE OF THE MONITORED ACTIVITY?	X		
ARE PERMIT REQUIRED COMPOSITE SAMPLES FLOW PROPORTIONAL? <b>NOTE:</b> Equal volume composite aliquots are acceptable if the measured flow is within $\pm 10\%$ for each aliquot. Some permits specify how the composite is to be taken (e.g., 5G/8HC).	X		
IS COLLECTION SAMPLE EQUIPMENT ADEQUATE? – <b>Not viewed.</b>			
IS FLOW MEASUREMENT ACCORDING TO PERMIT REQUIREMENTS?	X		

**DEPARTMENT OF ENVIRONMENTAL QUALITY – WATER DIVISION  
LABORATORY INSPECTION REPORT SUMMARY**

FACILITY NAME:	Town of Surry WWTF	Permit #:	VA0061646	INSPECTION DATE:	7/9/2015
<b>LABORATORY EVALUATION</b>			No required actions at this time		
		X	<b>REQUIRED CORRECTIVE ACTION</b>		
<b>SUMMARY of REQUESTS FOR CORRECTIVE ACTION</b>					
<b>Lab Records</b>					
<p><b>Laboratory Records section deficiency and required action:</b></p> <ol style="list-style-type: none"> <li>In your response to this report, please indicate whether the facility intends to follow the 21<sup>st</sup> or 22<sup>nd</sup> edition of Standard Methods for pH and TRC analysis. Please make sure benchsheets and other documentation are updated to reflect the current edition.</li> <li>The inspector reviewed the DMR and associated monitoring data for the June 2015 monitoring period. The following deficiencies were noted: <ul style="list-style-type: none"> <li><b>E. Coli:</b> <ul style="list-style-type: none"> <li>The DMR submitted for the June 2015 monitoring period listed an average concentration of E. Coli as 175 N/CML, versus a permit allowable average concentration of 126 N/CML. The inspector calculated the average concentration to be &gt;334 N/CML.</li> </ul> </li> <li><b>Total Recoverable Copper:</b> <ul style="list-style-type: none"> <li>The DMR submitted for the June 2015 monitoring period listed a Total Recoverable Copper average concentration of 6 mg/L, versus a permit allowable average concentration of 3.8 mg/L.</li> <li>The DMR submitted for the June 2015 monitoring period listed a Total Recoverable Copper maximum concentration of 6 mg/L, versus a permit allowable average concentration of 3.8 mg/L.</li> </ul> </li> </ul> </li> <li>It appears that a maximum quantification level (Max QL) for Total Recoverable Copper has not been attained. The Certificate of Analysis dated July 7, 2015 indicates that a maximum quantification level for Total Recoverable Copper is 2.0 µg/l. A specific analytical method is not specified in the permit; however a maximum quantification level value for Total Recoverable Copper is 1.5 µg/l. The permittee should ensure that the required QL level is being attained in accordance with the current permit.</li> </ol>					
<b>General Sampling and Analysis</b>					
<p><b>General Sampling and Analysis section deficiency and required action:</b></p> <ol style="list-style-type: none"> <li>None.</li> </ol>					
<b>pH Analysis</b>					
<p><b>pH deficiency and required action:</b></p> <ol style="list-style-type: none"> <li>None.</li> </ol>					
<b>TRC Analysis</b>					
<p><b>TRC deficiency and required action:</b></p> <ul style="list-style-type: none"> <li>Not evaluated.</li> </ul>					

**D.O. Analysis****D.O. deficiency and required action:**

1. None.

**OTHER – Comments or Observations**

1. On July 2, 2015 an anonymous complaint was received that the facility has DMR issues and is being operated by an unlicensed operator. On July 9, 2015 an inspection was conducted at the Town of Surry WWTF to follow-up on the complaint and to assess any environmental impacts. The DEQ team performed a sampling inspection and collected CBOD, TSS, Ammonia, TKN, Total Phosphorous and E. Coli samples at Outfall 001. The inspectors also conducted E. Coli samples upstream and downstream from the outfall. Field measurements for pH, conductivity, and dissolved oxygen were recorded at Outfall 001, upstream and downstream from the outfall. A sampling inspection report will follow once the results are available from DCLS.
2. The Certificate of Analysis, Chain of Custody and benchsheets for June 2015 were provided on 7/22/2015.
3. General sampling and calibration procedures for pH and D.O. were discussed with the chief operator during the phone interview on 7/27/2015. The pH and D.O. meters were not viewed during the inspection.
4. In May 2012, EPA issued a final rule to approve several new or revised analytical methods for measuring regulated pollutants in wastewater. This rule is also called the Methods Update Rule (MUR). One of the changes in this MUR is the naming convention used for citing Standard Methods. Citing the edition of Standard Methods is no longer applicable; now the citation must include the "**date tag**" in which the method was approved. Also note that the 18<sup>th</sup> and 19<sup>th</sup> Editions of Standard Methods are no longer approved; only the 20<sup>th</sup>, 21<sup>st</sup>, 22<sup>nd</sup>, and online editions are approved. For field parameters, only the 21<sup>st</sup>, 22<sup>nd</sup> and online Editions are approved. The current field parameter method citations are:

Parameter	SM 21 ed.	SM 22 <sup>nd</sup> ed. or Online ed.
Dissolved Oxygen	SM4500-O G -2001	SM4500-O G -2011
pH	SM4500-H <sup>+</sup> -2000	SM4500-H <sup>+</sup> -2011
Total residual chlorine	SM4500-Cl G -2000	SM4500-Cl G -2011
Temperature	SM2550 B-2000	SM2550 B-2010

*Please update laboratory records and benchsheets to reflect the above change in citing test methods.*

5. As a reminder, a Laboratory Control Sample (LCS) for pH should be tested at least annually. LCS should be a purchased Proficiency Test (PT) sample or a different buffer other than ones used for calibration of the meter. The same pH buffer values used for calibration of the instrument can be used as LCS if from a different source or different lot.
6. As a reminder, the D.O. calibration results (mg/L) should be within  $\pm 4\%$  of the barometric (or altitude) corrected oxygen saturated water value.

ANALYST:	Robert Finch	VPDES NO	VA0061646
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Meter: HACH SensION 3

Parameter: Hydrogen Ion (pH)  
Method: Electrometric  
3/2015

METHOD OF ANALYSIS: 18<sup>th</sup> Edition of Standard Methods

	21 <sup>st</sup> Edition of Standard Methods (SM 21) – 4500-H <sup>+</sup> B-2000 (SM 21 pH)
	22 <sup>nd</sup> Edition of Standard Methods (SM 22), or Online Editions of Standard Methods – 4500-H <sup>+</sup> B-2011 (SM 22 pH)

<b><i>pH is a method-defined analyte so modifications are not allowed. [40 CFR Part 136.6]</i></b>		Y	N
1)	Is a certificate of operator competence or initial demonstration of capability available for <u>each analyst/operator</u> performing this analysis? <b>NOTE:</b> Analyze 4 samples of known pH; you may use an external source of buffers or other known standards (different lot/manufacture than buffers used to calibrate meter). Recovery for each of the 4 samples must be +/- 0.2 SU of the known concentration of the sample or within "Acceptable Range" specified by the PT provider. [SM 1020 B.1] <b>NOTE: The same pH buffer [values] used for calibration of the instrument can be used as LCS if from a different source or different lot.</b>	X	
2)	<b>IF</b> a replicate sample is analyzed is there a written procedure for which result will be reported on DMR (Sample or Replicate) and is this procedure being followed? [DEQ – based on EPA Good Laboratory Practices Standards]	<b>Not Applicable</b>	
3)	Is a Laboratory Control Sample (LCS) tested at least annually and are results within acceptance criteria? [SM 21 B.2 or SM 22 1020 B.3.] <b>NOTE:</b> LCS should be a purchased Proficiency Test (PT) sample or a different buffer other than ones used for calibration of the meter [with a ±0.2 SU acceptance range or within "Acceptable Range" specified by the PT provider].. <b>NOTE: The same pH buffer [values] used for calibration of the instrument can be used as LCS if from a different source or different lot.</b>	<b>New Guidance</b>	
4)	Is the electrode in good condition (no chloride precipitate, scratches, deterioration, etc.)? [SM 21 pH or SM 22 pH 2.b./c. and 5.b.]	<b>Not viewed</b>	
5)	Is electrode storage solution in accordance with manufacturer's instructions? [SM 21 pH or SM 22 pH 4.a. and Mfr.]	<b>Not viewed</b>	
6)	Is meter calibrated on at least a daily basis using three buffers all of which are at the same temperature? [SM 21 pH or SM 22 pH 4.a.] <b>NOTE:</b> Start with Buffer 7 unless manufacturer's instructions state otherwise. [ <b>NOTE:</b> If meter is not capable of 3 buffer calibration use 2 buffers bracketing the expected sample pH and then <u>measure</u> a 3 <sup>rd</sup> buffer (the measurement value recorded must be ±0.1 SU), and then <u>reread and record</u> value of buffer 7 to ensure ±0.1 SU.]	X	
7)	After calibration, is a buffer analyzed as a check sample to verify that calibration is correct? Verification measurement should be within +/- 0.1 SU. [SM 21 1020 B 10.c. or SM 22 1020 B 11.c.]	X	
8)	Is calibration verification measurement repeated with every 10 samples and at the end of a series of samples? Verification measurement should be within +/- 0.1 SU. [SM 21 pH or SM 22 pH 4020 B 2.b.] <b>NOTE:</b> Not applicable if pH meter is calibrated before taking any measurement (e.g., if operator monitors daily pH at more than one facility and calibrates before each measurement).	<b>Not Applicable</b>	

Parameter: Hydrogen Ion (pH)

Method: Electrometric continued

9)	Do the buffer solutions appear to be free of contamination or growths? [SM 21 pH or SM 22 pH 3.a.]	Not viewed	
10)	Are buffer solutions within the listed shelf-life or have they been prepared within the last 4 weeks? [SM 21 pH or SM 22 pH 3.a.]	Not viewed	
11)	Is the cap or sleeve covering the access hole on the reference electrode removed when measuring pH? [Mfr.]	X	
12)	Is sample analyzed within 15 minutes of collections? [40 CFR Part 136]	X	
13)	Is the electrode rinsed and then blotted dry between reading solutions (Disregard if a portion of the next sample analyzed is used as the rinsing solution.)? [SM 21 pH or SM 22 pH 4.a and 4.b]	X	
14)	Is the sample stirred gently at a constant speed during measurement? [SM 21 pH or SM 22 pH 4.b.]	X	
15)	Does the meter hold a steady reading after reaching equilibrium? [4.b.]	X	

COMMENTS: A pH meter was not viewed at the time of inspection. General sampling and calibration procedures were discussed with the chief operator during the phone interview on 7/27/2015.

ANALYST:	Robert Finch	VPDES NO	VA0061646
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Meter: YSI 55 D.O. meter

Parameter: Dissolved Oxygen

Method: Membrane Electrode

11/2014

METHOD OF ANALYSIS: 18<sup>th</sup> Edition of Standard Methods

	21 <sup>st</sup> Edition of Standard Methods (SM 21) – 4500-O G-2001 (SM 21 DO)
	22 <sup>nd</sup> of Standard Methods, or Online Editions of Standard Methods (SM 22) – 4500-O G-2011 (SM 22 DO)

<b><i>Dissolved Oxygen (D.O.) is a method-defined analyte so modifications are not allowed. [40 CFR Part 136.6]</i></b>		<b>Y</b>	<b>N</b>
1)	Is a certificate of operator competence or initial demonstration of capability available for <u>each analyst/operator</u> performing this analysis? <b>NOTE:</b> Analyze 4 samples of air-saturated water. Recovery for each of the 4 samples must be +/- 4% of the calculated oxygen saturation for the altitude/barometric pressure and temperature of the samples. {Alternatively analyze 4 samples of water of known concentration (verified by iodometric titration procedure SM 21 or SM 22 4500-O C). Instrument measurements must agree within +/-0.1 mg/L of verified concentration.} [SM 21 or SM 22 1020 B.1 and 4020 B.1]	<b>X</b>	
2)	Are calibration results (mg/L) within $\pm$ 4% of the barometric (or altitude) corrected oxygen saturated water value? [SM 21 B.2 or SM 22 1020 B.2.]	<b>New Guidance</b>	
3)	If samples are collected, is collection carried out with a minimum of turbulence and air bubble formation and is the sample bottle allowed to overflow several times its volume? [SM 21 DO or SM 22 B 3.]	<b>In situ</b>	
4)	Are meter and electrode operable and providing consistent readings? [SM 21 DO G 2. or SM 22 DO G 2.]	<b>Not viewed</b>	
5)	Is membrane in good condition without trapped air bubbles? <b>NOTE: No air bubbles <math>\geq</math> 1/8 inch (total area of all bubbles).</b> [SM 21 DO G 3.b. or SM 22 DO G 3.b.]	<b>Not viewed</b>	
6)	Is correct filling solution used in electrode? [Mfr.]	<b>Not viewed</b>	
7)	Are water droplets shaken off the membrane prior to calibration? [Mfr.]	<b>X</b>	
8)	Is meter calibrated before use or at least daily? [Mfr. & SM 21 1020 B 10.a. or SM 22 1020 B 11.a]	<b>X</b>	
9)	Is calibration procedure performed according to manufacturer's instructions? [Mfr.]	<b>X</b>	
10)	Is sample stirred during analysis (or is there sufficient flow across probe's membrane surface)? [SM 21 DO or SM 22 DO G 3.b. and Mfr.]	<b>In situ</b>	
11)	Is the sample analysis procedure performed according to manufacturer's instructions? [Mfr.]	<b>X</b>	
12)	Is meter stabilized before reading D.O.? [Mfr.]	<b>X</b>	
13)	Is electrode stored according to manufacturer's instructions? [Mfr.]	<b>Not viewed</b>	

COMMENTS: A D.O. meter was not viewed during the inspection. General sampling and calibration procedures were discussed with the chief operator during the phone interview on 7/27/2015.

**DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION**  
**SAMPLE ANALYSIS HOLDING TIME/CONTAINER/PRESERVATION CHECK SHEET**

Revised 04/2014 [40 CFR, Part 136.3, Table II]

FACILITY NAME:	<b>Town of Surry WWTF</b>	VPDES NO	<b>VA0061646</b>	DATE:	<b>7/9/2015</b>									
<b>HOLDING TIMES</b> <i>[Note: Collection period (for composites) and Sample Collection time (end of collection period) must be recorded on the COC.]</i>				<b>SAMPLE CONTAINER</b>		<b>PRESERVATION</b> <i>[Note: Preservation is to occur <u>within 15 minutes of the end of the collection period.</u>]</i>								
PARAMETER	APPROVED	MET?		LOGGED?		ADEQ. VOLUME		APPROP. TYPE		APPROVED	MET?		CHECKED?	
		Y	N	Y	N	Y	N	Y	N		Y	N	Y	N
pH	15 MIN.					X		X		Within 15 minutes				
CHLORINE	15 MIN.									Within 15 minutes				
DISSOLVED O <sub>2</sub>	15 MIN					X		X		Within 15 minutes				
TEMPERATURE	IMMERSION STAB.									N/A - Immediately				
BOD <sub>5</sub> & CBOD <sub>5</sub>	48 HOURS									≤6° C	X		X	
TSS	7 DAYS									≤6° C	X		X	
COD	28 DAYS									≤6° C+H <sub>2</sub> SO <sub>4</sub> ,HCl, or H <sub>3</sub> PO <sub>4</sub> pH<2				
TOC	28 DAYS									≤6° C+H <sub>2</sub> SO <sub>4</sub> pH<2				
FECAL COLIFORM / <i>E. coli</i> / <i>Enterococci</i>	8 HRS									<10° C+0.008% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>				
AMMONIA	28 DAYS									≤6° C+H <sub>2</sub> SO <sub>4</sub> pH<2t	X		X	
TKN	28 DAYS									≤6° C+H <sub>2</sub> SO <sub>4</sub> pH<2	X		X	
NITRATE	48 HOURS									≤6° C				
NITRATE+NITRITE	28 DAYS									≤6° C+H <sub>2</sub> SO <sub>4</sub> pH<2				
NITRITE	48 HOURS									≤6° C				
TOTAL PHOS.	28 DAYS									≤6° C+H <sub>2</sub> SO <sub>4</sub> pH<2				
METALS	6 MONTHS									HNO <sub>3</sub> pH<2 Dissolved Metals: 0.45 µm filter immediately	X		X	
Cr <sup>+6</sup>	28 DAYS									Dissolved: 0.45 µm filter immediately. Buffer solution plus NaOH within 24 hrs				
PROBLEMS:	The sample and analysis times for pH, TRC, and D.O. are currently not being recorded on the benchsheet.													



**DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION  
EQUIPMENT TEMPERATURE LOG/THERMOMETER VERIFICATION CHECK SHEET**

11/2014

<b>FACILITY NAME:</b>	Town of Surry WWTF			<b>PERMIT NO:</b>	VA0061646		<b>DATE:</b>	7/9/2015					
<b>EQUIPMENT</b>	<b>Preservation Range</b>	<b>In Range?</b>		<b>Inspector Reading</b>  °C	<b>Checked &amp; Logged Daily?</b>		<b>Correct Increment?</b>		<b>ANNUAL THERMOMETER VERIFICATION</b>				
									<i>Is the NIST / NIST-Traceable Reference Thermometer within the manufacturer's expiration date or recertified yearly?</i>			Yes/No	
		Yes	No					<b>DATE CHECKED</b>	<b>MARKED</b>		<b>OFFSET VALUE1</b> (Correction)  °C	<b>INSPECT TEMP</b>  °C	
						Yes	No	Yes	No				
<b>SAMPLE REFRIGERATOR</b>	1-6° C	*	*	*	*	*	*	*	1/13/2015	*	*	*	*
<b>AUTO SAMPLER</b>	1-6° C												
<b>pH METER</b>	± 1° C	*	*						1/13/2015	*	*	*	*
<b>D.O. METER</b>	± 1° C	*	*						1/13/2015	*	*	*	*
<b>THERMOMETER-(EFFLUENT)</b>	± 1° C												

**COMMENTS:** \*Not viewed at the time of inspection. The dates when the sampling refrigerator, pH and D.O. meters were last checked were provided by the chief operator via e-mail on 7/22/2015.

**1** Offset Value tolerances (reference **NIST 105-6**): Sampling Refrigerator and Auto Sampler, pH and D.O. meters must be within ±2°C (2 times tolerance value). Thermometers measuring Outfall permit compliance must be within ±1.0°C (2 times tolerance value).

**\*\* DEPARTMENT OF ENVIRONMENTAL QUALITY - DMR Verificat**

***Enterococci***

Page 1 of 1

**Facility:**  
**Permit: VA0061646**

**Town of Surry WWTF**  
**Outfall: 001**

**Month: June**  
**Year: 2015**

DAY	DATE	Entero. #/100ml	Log Values
F			
S			
S	1		
M	2		
T	3	425	2.63
W	4		
T	5	1300	3.11
F	6		
S	7		
S	8		
M	9		
T	10	2420	3.38
W	11		
T	12	2420	3.38
F	13		
S	14		
S	15		
M	16		
T	17	1986	3.30
W	18		
T	19	517	2.71
F	20		
S	21		
S	22		
M	23		
T	24	1	0.00
W	25		
T	26	47	1.67
F	27		
S	28		
	29		
	30		
AVERAGES		8	2.52
			334

**GEOMETRIC  
MEAN**

30 = # days in month

8 = # of Fecal samples

Date	Flow (MGD)	D.O. (mg/L)	pH (S.U.)
1	0.054	6.93	7.04
2	0.092	6.89	7.11
3	0.084	7.17	6.99
4	0.113	6.9	7.02
5	0.102	7.12	6.97
6	0.105	6.88	7.07
7	0.085	7.33	7
8	0.113	7.4	7.04
9	0.125	7.7	6.98
10	0.108	7.54	6.95
11	0.097	7.19	6.9
12	0.091	7.56	6.94
13	0.086	7.14	6.81
14	0.086	7.1	6.67
15	0.08	7.57	6.71
16	0.082	7.43	6.95
17	0.078	6.89	6.88
18	0.076	7.44	6.84
19	0.061	7.65	6.86
20	0.077	7.26	6.89
21	0.076	7.84	6.99
22	0.066	7.63	6.92
23	0.079	7.71	6.98
24	0.071	7.19	6.71
25	0.08	7.32	7.03
26	0.102	7.6	6.97
27	0.115	7.48	6.94
28	0.105	7.6	6.99
29	0.084	7.85	6.97
30	0.082	7.72	6.93

Min		6.88	6.67
Max	0.125		7.11
Avg	0.0885		

TKN

Date	Flow (MGD)	Daily concentration (mg/L)		Daily loading (g/d)	Conversion
5-Jun		0.102	1.57	606.1	3785
12-Jun		0.091	2.07	713.0	3785
19-Jun		0.061	1.16	267.8	3785
24-Jun		0.071	1.23	330.5	3785
30-Jun		0.082	0.68	211.1	3785
Monthly Average			1.342	425.7	~430
Maximum Weekly Average			2.07	713.0	~710

The limitation is expressed in two significant figures

CBOD<sub>5</sub>

Date	Flow (MGD)	Daily concentration (mg/L)	Daily loading (g/d)	Conversion
5-Jun	0.102	5	1930.4	3785
12-Jun	0.091	4	1377.7	3785
19-Jun	0.061	2	461.8	3785
24-Jun	0.071	5	1343.7	3785
30-Jun	0.082	3	931.1	3785
	Monthly Average	3.8	1208.9	~1200
	Maximum Weekly Average	5	1930.4	~1900

The limitation is expressed in two significant figures

**Attachment N**

**VDH Coordination Response**



RECEIVED PRO

JUN 06 2016

# COMMONWEALTH of VIRGINIA

Marissa J. Levine, MD, MPH, FAAFP  
State Health Commissioner

DEPARTMENT OF HEALTH  
**OFFICE OF DRINKING WATER**  
Southeast Virginia Field Office

John J. Aulbach II, PE  
Director, Office of Drinking Water

830 Southampton Avenue  
Suite 2058  
Norfolk, VA 23510  
Phone (757) 683-2000  
Fax (757) 683-2007

**DATE:**

JUN 01 2016

**FROM:**

*DBH*

Daniel B. Horne, PE, Engineering Field Director

**TO:**

Adam C. Eller, Environmental Specialist II  
Piedmont Regional Office  
4949A Cox Road  
Glen Allen, Virginia 23060

**CITY/COUNTY:**

Surry

**APPLICANT:**

Town of Surry

**PERMIT TYPE:**

VPDES

**APPLICATION TYPE:**

Re-Issuance (Existing)

**PROJECT:**

Town of Surry Wastewater Treatment Facility

**SUBJECT:**

Review response for DEQ's permit application #VA0061646

Our office has reviewed the application for the discharge of treated wastewater from the Town of Surry Wastewater Treatment Facility into an unnamed tributary of Dark Swamp which flows to Grays Creek and then to the James River

No public raw water intakes in Virginia were found downstream from the discharge point/area.

JWW/shb

cc: VDH, ODW – Central Office  
Surry County Health Dept.

Jamie S. Heisig-Mitchell, Chief Technical Services Division, Hampton Roads Sanitation District  
Honorable Will Gwaltney, Jr., Mayor, Town of Surry

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**Attachment O**

**Order by Consent**



# *COMMONWEALTH of VIRGINIA*

## *DEPARTMENT OF ENVIRONMENTAL QUALITY*

### PIEDMONT REGIONAL OFFICE

4949-A Cox Road, Glen Allen, Virginia 23060

(804) 527-5020 Fax (804) 527-5106

[www.deq.virginia.gov](http://www.deq.virginia.gov)

Doug W. Domenech  
Secretary of Natural Resources

David K. Paylor  
Director

Michael P. Murphy  
Regional Director

## **STATE WATER CONTROL BOARD ENFORCEMENT ACTION - ORDER BY CONSENT ISSUED TO TOWN OF SURRY FOR**

## **TOWN OF SURRY WASTEWATER TREATMENT PLANT VPDES Permit No. VA0061646**

### **SECTION A: Purpose**

This is a Consent Order issued under the authority of Va. Code § 62.1-44.15, between the State Water Control Board and the Town of Surry, regarding the Town of Surry Wastewater Treatment Plant, for the purpose of resolving certain violations of the State Water Control Law, the Virginia Pollutant Discharge Elimination System Permit Regulation and the above-referenced Permit

### **SECTION B: Definitions**

Unless the context clearly indicates otherwise, the following words and terms have the meaning assigned to them below:

1. "Board" means the State Water Control Board, a permanent citizens' board of the Commonwealth of Virginia, as described in Va. Code §§ 10.1-1184 and 62.1-44.7.
2. "CBOD" means carbonaceous biochemical oxygen demand.
3. "Department" or "DEQ" means the Department of Environmental Quality, an agency of the Commonwealth of Virginia, as described in Va. Code § 10.1-1183.
4. "Director" means the Director of the Department of Environmental Quality, as described in Va. Code § 10.1-1185.
5. "DMR" means Discharge Monitoring Report.



6. "Facility" or "Plant" means the Town of Surry Wastewater Treatment Plant, located at 11463 Rolfe Highway in Surry, Virginia, which treats and discharges treated sewage and other municipal wastes, for the residents and businesses of the Town of Surry.
7. "Surry" or "Town" means the Town of Surry, a political subdivision of the Commonwealth of Virginia. Surry is a "person" within the meaning of Va. Code § 62.1-44.3.
8. "Notice of Violation" or "NOV" means a type of Notice of Alleged Violation under Va. Code § 62.1-44.15.
9. "O&M" means operations and maintenance.
10. "Order" means this document, also known as a "Consent Order" or "Order by Consent," a type of Special Order under the State Water Control Law.
11. "Permit" means VPDES Permit No. VA0061646, which was issued under the State Water Control Law and the Regulation to Surry on January 17, 2006 and which expires on January 16, 2011.
12. "Pollutant" means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 USC § 2011 *et seq.*)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water... 9 VAC 25-31-10.
13. "Pollution" means such alteration of the physical, chemical, or biological properties of any state waters as will or is likely to create a nuisance or render such waters (a) harmful or detrimental or injurious to the public health, safety, or welfare or to the health of animals, fish, or aquatic life; (b) unsuitable with reasonable treatment for use as present or possible future sources of public water supply; or (c) unsuitable for recreational, commercial, industrial, agricultural, or other reasonable uses, provided that (i) an alteration of the physical, chemical, or biological property of state waters or a discharge or deposit of sewage, industrial wastes or other wastes to state waters by any owner which by itself is not sufficient to cause pollution but which, in combination with such alteration of or discharge or deposit to state waters by other owners, is sufficient to cause pollution; (ii) the discharge of untreated sewage by any owner into state waters; and (iii) contributing to the contravention of standards of water quality duly established by the Board, are "pollution." Va. Code § 62.1-44.3.
14. "PRO" means the Piedmont Regional Office of DEQ, located in Glen Allen, Virginia.
15. "Regulation" means the VPDES Permit Regulation, 9 VAC 25-31-10 *et seq.*

16. "State Water Control Law" means Chapter 3.1 (§ 62.1-44.2 *et seq.*) of Title 62.1 of the Va. Code.
17. "State waters" means all water, on the surface and under the ground, wholly or partially within or bordering the Commonwealth or within its jurisdiction, including wetlands. Va. Code § 62.1-44.3.
18. "TKN" means Total Kjeldahl Nitrogen.
19. "TSS" means total suspended solids.
20. "Va. Code" means the Code of Virginia (1950), as amended.
21. "VAC" means the Virginia Administrative Code.
22. "VPDES" means Virginia Pollutant Discharge Elimination System.
23. "Warning Letter" or "WL" means a type of Notice of Alleged Violation under Va. Code § 62.1-44.15.

#### **SECTION C: Findings of Fact and Conclusions of Law**

1. The Town of Surry owns and operates a wastewater treatment Plant in Surry, Virginia. The Permit allows Surry to discharge treated sewage and other municipal wastes from the Plant to an unnamed tributary of Dark Swamp, in strict compliance with the terms and conditions of the Permit.
2. Dark Swamp is located in the James River (Lower) Basin. Dark Swamp is not listed in DEQ's 305(b) report as impaired.
3. The Department and the Town of Surry entered into a Consent Order on June 29, 2007 which required the Town to connect to the regional sewer collection system owned by the County of Surry. After analysis of the project the County determined that it was not economically feasible for the County to accept the wastewater flow from the Town.
4. Based on a Department review of DMRs submitted by Surry for the April 2008 through March 2009 monitoring periods as required by the Permit, Surry exceeded discharge limitations contained in Part I.A.1 of the Permit for TKN for the months of April through November 2008; CBOD in April and May of 2008 and March 2009; total copper in June through November 2008 and January and February 2009; and chlorine in January 2009.
5. DMRs indicated that the monthly average influent flow from May through October of 2008, December 2008, and from January through March of 2009 exceeded the design flow of the Facility. DEQ did not receive written notice of this exceedance. Part I,

Section D.1 of VPDES Permit VA0061646 requires that a written notice must be submitted when the monthly average flow influent to the sewage treatment works reaches 95 percent of the design capacity authorized in this permit for each month of any three consecutive month period. The written notice must be submitted within 30 days from the third consecutive month for which the flow reached 95% of the design capacity. The Plant operator later stated that after his hiring in April 2009, the flow meter was found to be recording high flows when compared to instantaneous readings, and that the meter's calibration appears to drift.

6. DEQ staff noted that the DMRs for the May 2008 through February 2009 monitoring periods, received at PRO on April 10, 2009, were not submitted by Surry before the 10<sup>th</sup> day of each month after monitoring occurs, as required by Part II.C.1 of VPDES Permit VA0061646.
7. Surry had also reported total chlorine (parameter 005) on DMRs submitted for the May 2008 through March 2009 monitoring periods in a manner inconsistent with Part I.D.7 of the Permit.
8. PRO issued Notices of Violation Nos. W2008-09-P-0001 on September 19, 2008 and W2009-05-P-0002 on May 20, 2009 for the above Permit effluent limit exceedances and monitoring submission violations.
9. On June 8, 2009, the Department met with Surry to discuss the compliance issues at the Facility. Surry stated that prior to April 2009 the Facility was operated by a contract operator who failed to make required monitoring submittals to DEQ in a timely manner and allowed the Facility to fall into disrepair. The new contract operator attended the meeting and provided the Department with a detailed diagnostic evaluation of the Facility and a synopsis of conditions at the Plant and the actions taken to date to improve effluent quality. Surry submitted to the Department a list of additional interim corrective action items designed to bring the Town into compliance with its Permit effluent limits without a costly upgrade.
10. Based on a Department review of DMRs submitted by Surry for the April 2009 through October 2009 monitoring periods as required by the Permit, Surry exceeded discharge limitations contained in Part I.A.1 of the Permit for TKN in April, June and August of 2009; CBOD in April and June of 2009; total copper from April through October 2009; chlorine in June 2009; and TSS in June 2009. The violations observed in June 2009 were the result of an upset caused by a discharge of diesel fuel from a commercial garage into the collection system, which resulted in mortality of the functioning biomass. The upset was reported by Surry on June 8, 2009.
11. DMRs also indicated that the monthly average influent flow from April through September 2009 exceeded the design flow of the Facility. DEQ did not receive written notice of this exceedance. Part I, Section D.1 of the Permit requires that a written notice must be submitted when the monthly average flow influent to the sewage treatment

works reaches 95 percent of the design capacity authorized in this permit for each month of any three consecutive month period. The written notice must be submitted within 30 days from the third consecutive month for which the flow reached 95% of the design capacity.

12. DEQ staff noted that Surry had reported total chlorine (parameter 005) on DMRs submitted for the April, May, August, September, and October 2009 monitoring periods in a manner inconsistent with Part I.D.7 of the Permit. In addition, there was a discrepancy between reported TSS values on the October 2009 DMR and the operations report for October 2009 which is contrary to Part II.B.1 of the Permit.
13. In addition, Surry had failed to submit a written report of noncompliance with the DMRs, as required by Part II I.3. of the Permit, for the July, September, and October 2009 monitoring periods.
14. PRO issued a Notice of Violation No. W2009-12-P-0004 on January 4, 2010 for the Permit effluent limit exceedances, monitoring, and reporting violations listed in paragraphs C10 through C14.
15. A Department review of DMRs submitted by Surry for the November 2009 through January 2010 monitoring periods indicate that Surry failed to meet Permit effluent limits for CBOD in November 2009; copper in November 2009 through January 2010; TKN in November and December 2009; and, chlorine in January 2010.
16. Surry's operating logs indicate that it discharged treated wastewater from the Plant every day from April 1, 2008 through January 31, 2010.
17. Va. Code § 62.1-44.5 states that: "[E]xcept in compliance with a certificate issued by the Board, it shall be unlawful for any person to discharge into state waters sewage, industrial wastes, other wastes, or any noxious or deleterious substances."
18. The Regulation, at 9 VAC 25-31-50, also states that except in compliance with a VPDES permit, or another permit issued by the Board, it is unlawful to discharge into state waters sewage, industrial wastes or other wastes.
19. Va. Code § 62.1-44.15(5a) states that a VPDES permit is a "certificate" under the statute.
20. The Department has issued no permits or certificates to Surry other than VPDES Permit No. VA0061646.
21. The unnamed tributary of Dark Swamp is a surface water located wholly within the Commonwealth and is a "state water" under State Water Control Law.
22. Va. Code § 62.1-44.31 states that it shall be unlawful for any owner to fail to comply with any special order adopted by the Board.

23. Based on the results of DMRs submitted by Surry and the information received by the Department at the June 8, 2009 meeting, the Board concludes that Surry has violated the Permit, Va. Code § 62.1-44.5 and 9 VAC 25-31-50, by discharging treated sewage and municipal wastes from the Plant while concurrently failing to comply with the conditions of the Permit, as described in paragraphs C3 through C7 and C10 through C14, above.
24. In order for Surry to return to compliance, DEQ staff and representatives of Surry have agreed to the Schedule of Compliance, which is incorporated as Appendix A of this Order.

#### **SECTION D: Agreement and Order**

Accordingly, by virtue of the authority granted it in Va. Code §§ 62.1-44.15, the Board orders Surry, and Surry agrees to:

1. The termination of the previous Consent Order issued on June 29, 2007, by virtue of the issuance of this Order.
2. Perform the actions described in Appendices A and B of this Order; and
3. Pay a civil charge of \$7,020 within 30 days of the effective date of the Order in settlement of the violations cited in this Order.

Payment shall be made by check, certified check, money order or cashier's check payable to the "Treasurer of Virginia," and delivered to:

Receipts Control  
Department of Environmental Quality  
Post Office Box 1104  
Richmond, Virginia 23218

Surry shall include its Federal Employer Identification Number (FEIN) with the civil charge payment and shall indicate that the payment is being made in accordance with the requirements of this Order for deposit into the Virginia Environmental Emergency Response Fund (VEERF).

#### **SECTION E: Administrative Provisions**

1. The Board may modify, rewrite, or amend this Order with the consent of Surry for good cause shown by Surry, or on its own motion pursuant to the Administrative Process Act, Va. Code § 2.2-4000 *et seq.*, after notice and opportunity to be heard.
2. This Order addresses and resolves only those violations specifically identified in Section C of this Order. This Order shall not preclude the Board or the Director from taking any action authorized by law, including but not limited to: (1) taking any action authorized

by law regarding any additional, subsequent, or subsequently discovered violations; (2) seeking subsequent remediation of the facility; or (3) taking subsequent action to enforce the Order.

3. For purposes of this Order and subsequent actions with respect to this Order only, Surry admits the jurisdictional allegations, findings of fact, and conclusions of law contained herein.
4. Surry consents to venue in the Circuit Court of the City of Richmond for any civil action taken to enforce the terms of this Order.
5. Surry declares it has received fair and due process under the Administrative Process Act and the State Water Control Law and it waives the right to any hearing or other administrative proceeding authorized or required by law or regulation, and to any judicial review of any issue of fact or law contained herein. Nothing herein shall be construed as a waiver of the right to any administrative proceeding for, or to judicial review of, any action taken by the Board to modify, rewrite, amend, or enforce this Order.
6. Failure by Surry to comply with any of the terms of this Order shall constitute a violation of an order of the Board. Nothing herein shall waive the initiation of appropriate enforcement actions or the issuance of additional orders as appropriate by the Board or the Director as a result of such violations. Nothing herein shall affect appropriate enforcement actions by any other federal, state, or local regulatory authority.
7. If any provision of this Order is found to be unenforceable for any reason, the remainder of the Order shall remain in full force and effect.
8. Surry shall be responsible for failure to comply with any of the terms and conditions of this Order unless compliance is made impossible by earthquake, flood, other acts of God, war, strike, or such other occurrence. Surry shall show that such circumstances were beyond its control and not due to a lack of good faith or diligence on its part. Surry shall notify the DEQ Regional Director verbally within 24 hours and in writing within three business days when circumstances are anticipated to occur, are occurring, or have occurred that may delay compliance or cause noncompliance with any requirement of the Order. Such notice shall set forth:
  - a. the reasons for the delay or noncompliance;
  - b. the projected duration of any such delay or noncompliance;
  - c. the measures taken and to be taken to prevent or minimize such delay or noncompliance; and
  - d. the timetable by which such measures will be implemented and the date full compliance will be achieved.

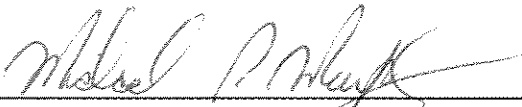
Failure to so notify the Regional Director verbally within 24 hours and in writing within three business days, of learning of any condition above, which the Surry intends to assert will result in the impossibility of compliance, shall constitute a waiver of any claim to inability to comply with a requirement of this Order.

9. This Order is binding on the parties hereto, their successors in interest, designees and assigns, jointly and severally.
10. This Order shall become effective upon execution by both the Director or his designee and Surry. Nevertheless, Surry agrees to be bound by any compliance date which precedes the effective date of this Order.
11. This Order shall continue in effect until:
  - a. Surry petitions the Director or his designee to terminate the Order after it has completed all of the requirements of the Order and the Director or his designee approves the termination of the Order; or
  - b. the Director or Board terminates the Order in his or its sole discretion upon 30 days' written notice to Surry.

Termination of this Order, or any obligation imposed in this Order, shall not operate to relieve Surry from its obligation to comply with any statute, regulation, permit condition, other order, certificate, certification, standard, or requirement otherwise applicable.

12. Any plans, reports, schedules or specifications attached hereto or submitted by Surry and approved by the Department pursuant to this Order are incorporated into this Order. Any non-compliance with such approved documents shall be considered a violation of this Order.
13. The undersigned representative of Surry certifies that he or she is a responsible official authorized to enter into the terms and conditions of this Order and to execute and legally bind Surry to this document. Any documents to be submitted pursuant to this Order shall also be submitted by a responsible official of Surry.
14. This Order constitutes the entire agreement and understanding of the parties concerning settlement of the violations identified in Section C of this Order, and there are no representations, warranties, covenants, terms or conditions agreed upon between the parties other than those expressed in this Order.
15. By its signature below, Surry voluntarily agrees to the issuance of this Order.

And it is so ORDERED this 25<sup>th</sup> day of JUNE, 2010.

  
\_\_\_\_\_  
Michael P. Murphy, Regional Director  
Department of Environmental Quality

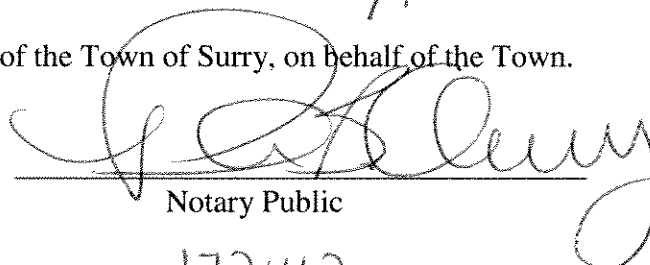
The Town of Surry voluntarily agrees to the issuance of this Order.

Date: 4/15/2010 By: Will M. Gwaltney, Sr. Mayor  
(Person) (Title)

Commonwealth of Virginia

City/County of Surry

The foregoing document was signed and acknowledged before me this 15<sup>th</sup> day of April, 2010, by Will M. Gwaltney, Sr. who is Mayor of the Town of Surry, on behalf of the Town.

  
\_\_\_\_\_  
Notary Public  
172412  
Registration No.

My commission expires: 7/3/10

Notary seal:

PAMELA B. OWNEY  
Notary Public  
Commonwealth of Virginia  
No. 172412  
My Commission Expires 7/3/10



## APPENDIX A SCHEDULE OF COMPLIANCE

1. The Town of Surry must raise revenue for an upgrade to the Facility to meet Permit effluent limits. The Town shall be deemed to be raising upgrade project funds to the limit of its financial capability if the following criteria are met:
  - a. At least annually the Town adjusts its sewer rates so that within four years of the effective date of this Order:
    - i.) The annual sewer bill for residential customers (i.e. 7 ccf of average monthly use) will be at least 1.25% of median household income<sup>1</sup>; and
    - ii.) The sewer volume rate for customers identified as industrial users in the Town's utility billing records will equal the rate charged to the Town's residential customers.
  - b. The Town annually seeks grant or other funding for a Facility upgrade from all applicable federal and state sources.

### DMR Exceedances

2. **No later than October 1, 2010**, Surry shall submit to DEQ, for review and approval, a detailed corrective action plan (CAP) addressing how Surry will achieve consistent compliance with all effective Permit effluent limits. The CAP must be accompanied by an application for a Permit modification for flow expansion and include a schedule of implementation and a funding plan. Upon DEQ approval the corrective action plan and schedule will become a part of and enforceable under the terms of this Order. Surry shall provide any DEQ-requested information or modifications to the plan in accordance with the terms or deadlines of the request.
3. **No later than October 1, 2010**, Surry shall submit to DEQ, a study plan with a schedule of implementation for the evaluation and reduction of inflow and infiltration (I&I) in the collection system of the Plant. The study plan shall include a flow monitoring program designed for collecting wastewater flow data for different areas in the collection system during dry-weather and wet-weather flow conditions. The schedule, upon Department approval, shall be incorporated into and become an enforceable part of this Order.
4. **No later than June 1, 2011**, submit to the Department the results of the I&I study plan in Appendix A 3 above. This submittal shall include a base map of the collection

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<sup>1</sup> As reflected in the 2000 and any subsequent census. In the years between each census, the median household income (MHI) shall be adjusted based on the percent increase in the consumer price index-- all urban consumers U.S. city average (CPI-U) for that year.

system, results of the flow monitoring, records of the collection system inspections and a prioritized list, with a schedule of rehabilitation work. The schedule, upon Department approval, shall be incorporated into and become an enforceable part of this Order.

5. **Upon Department approval** of the I&I rehabilitation work in Appendix A 4 above, immediately implement the sewer collection system rehabilitation work.
6. Surry must complete corrective action in accordance with the Department approved corrective action plan and schedule, or DEQ-approved modifications thereto, as expeditiously as possible, but **no later than March 1, 2012**.
7. Surry must submit a final report documenting completion of corrective action, in accordance with the corrective action plan, within 30 days of completion of corrective action but **no later than April 1, 2012**.

#### REPORTING

8. Surry must immediately comply with the provisions of the Permit with respect to monitoring, recordkeeping and reporting requirements.

#### DEQ Contact

Unless otherwise specified in this Order, the Town of Surry shall submit all requirements of Appendix A of this Order to:

**Frank Lupini**  
**Enforcement Specialist**  
**VA DEQ –Piedmont Regional Office**  
**4949A Cox Road,**  
**Glen Allen, Virginia 23060**  
**Frank.Lupini@deq.virginia.gov**

## APPENDIX B INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

From the effective date of this Order until completion of the corrective action requirements contained in Appendix A, but no later than June 1, 2012, and in accordance with the approved schedule for such action Town of Surry shall monitor and limit the discharge from Outfall No. 001 of the Facility in accordance with VPDES Permit Number VA0061646, except as specified below. These interim limits shall retroactively apply, if applicable, as of the first day of the month in which this Order becomes effective.

These requirements shall be construed in light of the Regulation.

Parameter Description	Parameter Limits			
	Monthly Average		Weekly Average	
Total Recoverable Copper	19 µg/L		19 µg/L	
TKN	4.0 mg/L	0.91 kg/day	5.3 mg/L	1.2 kg/day
CBOD	*	*	*	*

\* With respect to CBOD, the parties acknowledge that during the period of corrective action implementation, Surry may experience additional violations. Accordingly, pending completion of the Department approved corrective action plan, Surry must operate the facility in a manner that produces the lowest possible CBOD concentration of which it is capable, in order to minimize such additional violations and minimize potential impacts to water quality.

**Attachment P**

**Amendment to Order by Consent**



# *COMMONWEALTH of VIRGINIA*

## *DEPARTMENT OF ENVIRONMENTAL QUALITY*

### PIEDMONT REGIONAL OFFICE

4949-A Cox Road, Glen Allen, Virginia 23060

(804) 527-5020 Fax (804) 527-5106

[www.deq.virginia.gov](http://www.deq.virginia.gov)

Douglas W. Domenech  
Secretary of Natural Resources

David K. Paylor  
Director

Michael P. Murphy  
Regional Director

## **STATE WATER CONTROL BOARD ENFORCEMENT ACTION AMENDMENT TO ORDER BY CONSENT ISSUED TO TOWN OF SURRY FOR TOWN OF SURRY WASTEWATER TREATMENT PLANT VPDES Permit No. VA0061646**

### **SECTION A: Purpose**

This is an Amendment of an Order by Consent (Amendment) issued under the authority of Va. Code § 62.1-44.15, between the State Water Control Board (Board) and the Town of Surry, regarding the Town of Surry Wastewater Treatment Plant, for the purpose of revising certain provisions of the Order by Consent (Order) issued by the Board to the Town of Surry on June 25, 2010, and for resolving certain violations of the State Water Control Law, the Virginia Pollutant Discharge Elimination System Permit Regulation and the above-referenced Permit.

### **SECTION B: Basis for Amendment**

1. The Town of Surry owns and operates the Town of Surry Wastewater Treatment Plant (the "Plant") in Surry, Virginia. The Permit allows Surry to discharge treated sewage and other municipal wastes from the Plant to an unnamed tributary of Dark Swamp, in strict compliance with the terms and conditions of the Permit.
2. The State Water Control Board entered into a Consent Order with the Town of Surry effective June 25, 2010, for violations of TKN, CBOD, copper, and chlorine effluent limitations as well as reporting violations.
3. The Order required the Town of Surry to raise sewer rates, identify and complete Inflow and Infiltration (I&I) work on the Plant's collection system, and to complete a corrective

action plan at the Plant to meet VPDES Permit effluent limits. The Town has increased the sewer rates, completed I&I work on the collection system, and is installing an ultraviolet disinfection system. The work on the collection system and UV disinfection expended all of the resources available to the Town of Surry for corrective action. The Town has hired an engineer to draft plans for an upgrade to the Plant, and until completion the Town will experience additional effluent violations.

4. The Town of Surry has requested an extension to the deadline of the Order for completing the planned treatment plant corrective action. The Town plans to install upgrades to the wastewater treatment plant to address all of the violations.
5. Based on the information available to DEQ to date, the Town of Surry is otherwise in compliance with the Order and is current with all monitoring and reporting requirements.

#### **SECTION C: Agreement and Order**

Accordingly, by virtue of the authority granted it in Va. Code § 62.1-44.15, the Board orders the Town of Surry, and the Town of Surry agrees to perform the actions described in Appendix C of this Amendment, which supersedes and cancels only paragraphs 2, 6, and 7 of Appendix A of the Order. Both the Board and the Town of Surry understand and agree that this Amendment does not alter, modify or amend any other provision of the Order and that the unmodified provisions of the Order remain in effect by their own terms.

And it is so ORDERED this 3<sup>RD</sup> day of OCTOBER, 2013.

  
\_\_\_\_\_  
Michael P. Murphy, Regional Director  
Department of Environmental Quality

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The Town of Surry voluntarily agrees to the issuance of this Order.

Date: 6-20-2013 By: William Gwaltney, Jr. Mayor  
(Person) (Title)  
Town of Surry

Commonwealth of Virginia

City/County of Surry

The foregoing document was signed and acknowledged before me this 20<sup>th</sup> day of  
June, 2013, by William Gwaltney, Jr. who is  
Mayor of the Town of Surry, on behalf of the Town.

PAMELA B. OWNEY  
Notary Public  
Commonwealth of Virginia  
No. 172412  
My Commission Expires 7/3/14

[Signature]  
Notary Public  
172412  
Registration No.

My commission expires: 7/3/14

Notary seal:

## **APPENDIX A SCHEDULE OF COMPLIANCE**

The Town of Surry shall:

1. On or before September 1, 2013, complete installation of the Department approved UV disinfection system and obtain a Certificate to Operate (CTO) on or before September 15, 2013.
2. On or before October 30, 2013, submit to the Department for review and approval preliminary engineering report outlining the options and cost for the Town to upgrade their wastewater treatment plant to achieve consistent compliance with all Permit effluent limits.
3. On or before March 1, 2014, submit an application to the Department for a certificate to construct (CTC) the upgrade.
4. On or before June 1, 2014, begin construction on the upgrade and obtain a CTO on or before December 15, 2014.
5. Meet all requirements of the Permit with respect to monitoring, recordkeeping and reporting requirements. The interim limits contained in Appendix B of the Consent Order issued July 25, 2010, remain in effect until the month following the issuance of the CTO or until January 15, 2015, whichever occurs first.
6. Submit to the Department a monthly update on the progress of the upgrade on the 15<sup>th</sup> of each month until the CTO is issued.

### DEQ Contact

Unless otherwise specified in this Order, the Town of Surry shall submit all requirements of Appendix A of this Order to:

Frank Lupini  
Enforcement Specialist  
VA DEQ –Piedmont Regional Office  
4949A Cox Road,  
Glen Allen, Virginia 23060  
Frank.Lupini@deq.virginia.gov